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Art. I.—THE NORTHWEST.*

THE commendable zeal, liberality, and industry of our government, in fitting out expeditions for the exploration of different portions of the world; the masterly manner in which those corps are conducted, and the splendid *Reports* of the several chiefs, give us ample evidence of their ability to discharge the trust reposed in them, at the same time that our national pride is highly gratified when we compare these labors and publications with those of other kingdoms.

The *Report* of the Exploring Expedition, by Lieut. Wilkes, is one of the best works ever published, on the general natural history of the different portions of the globe visited by him. The style of composition is chaste, plain, and terse, while the style of artistic description and embellishment reflects the highest credit on all concerned in issuing that ponderous work.

The same may be said of Lieut. Lynch's *Explorations* of the river Jordan and the Dead Sea; he has dissolved the mists of error which so long obscured that holy region, and shed a blaze of light where so long brooded darkness and mystery.

And when we turn our eyes to the vast unknown and unexplored regions of our own land; that long, wide waste of *terra incognita*, our own *western wilds*, we come with joy and pleasure to lay our offerings at the feet of those who have traversed, explored, and made known. Prominent amongst these are Lewis and Clarke, Astor and Emory; but the great chief of all, the Magnus Apollo, is J. C. Fremont, whose toils and hardships, whose labors and sufferings, whose bravery and endurance, tower aloft in majestic grandeur, like the lofty turrets of the Sierra Nevada.

* Report of a Geological Survey of Wisconsin, Iowa, Minnesota and Nebraska. By Hon. D. D. Owen, M. D., United States Geologist. By authority of Congress.

Greece had her Argonauts; but the glory of their achievements is clouded by the stain of murder and theft. The Trojans had their Æneas; but war, debauchery, and bloodshed tracked his course. Spain had her Pizarro and Cortes; but every sin in the long, black catalogue of crime, disgraced their names and their deeds. England had her Cook; but he was cut off in the maturity of his prime, before he could reap the glorious reward merited by his indefatigable toils. Can it not be justly said of Fremont, that he performed the labors and exploits, and achieved the ends effected by each of these characters? Like Cook, he explored unknown regions; like Cortes and Pizarro, he subdued savage tribes; like Æneas, he settled a new empire; and like Jason, he found more than the *golden fleece*—he has thrown millions into the treasury of the world.

But let us not lose sight of our original purpose, which is to lay before our readers a brief outline of Dr. Owen's Geological Report. This report is embraced within a large quarto volume of 638 pages, letter press, and is embellished on nearly every page with admirable wood cuts, descriptive of beautiful scenery, noble waterfalls, and castellated rocks; together with various specimens of geological and lithological strata, &c. Appended to the volume are 27 plates, executed in the highest style of art, displaying fossil remains of shells, plants and animals, together with 20 folded maps, exhibiting the stratification of all the region explored. But the most striking feature of the book is an immense *geographical* and *geological* map, four feet long, and two feet four inches wide, exhibiting the rivers, lakes, &c., and also showing, by different colors, the location and extent of the coal fields, lead, copper and iron beds, and the various strata of limestone, granite, sandstone, &c. It is a book worthy of our nation, fully answering the purpose intended, and reflecting the highest credit on its author. If the reader is disposed, we will endeavor to make him more intimately acquainted with the volume and the region of country it treats of; and to do this we will be compelled to use, in a great many cases, the words of the writer himself, and his assistants:

"The country, which has been carefully examined, and of which the geological features have been determined,* is the most extensive ever reported by any geologist or geological corps in this country, including, as it does, more than four times as much territory as the State of New-York, and being about twice and a half as large as the Island of Great Britain.

"The map reaches from lat 38° to lat. 49°; and from long. 89° 30' to long. 96° 30'. In other words, it has a length from north to south of upwards of seven hundred and fifty miles, from St. Louis to the British line; and an extreme breadth of

* Introduction, page 17.

about three hundred and fifty miles; embracing the Mississippi and all its tributaries, from its source to its junction with the Missouri, as high as Council Bluffs; the Red River of the north, from its source to the northern boundary of the United States; together with the northern and southern shores of Lake Superior, from Fond du Lac, north to the British dominions, and east to the Michigan line. The average width of the territory thus laid down being about two hundred and seventy miles, its area exceeds *two hundred thousand square miles*."

"Throughout this vast district, all the principal streams which water it have been explored, to the number of *ninety-one*, and more than a fourth of these have been navigated from their mouth almost to their source, in bark canoes."

"*Coal and iron* in abundance have been found, and other valuable minerals, and their localities carefully determined."

"The coal-measures of Iowa are shallow, much more so than those of the Illinois coal field. They seem attenuated, as towards the margin of an ancient carboniferous sea; not averaging more than fifty fathoms in thickness. Of these the productive coal-measures are less than a hundred feet thick. The thickest vein of coal detected in Iowa does not exceed from four to five feet; while, in Missouri, some reach the thickness of twenty feet and upwards.

"*Lignite* was found on the Mankato river and its branches, which approached the cannel coal in its character. Although search was made, no regular bed of lignite was found. All the fragments we gathered, when put together, only weighed about ten pounds.

"The only mineral that promises to be of much value in this region of country, is a bed of *nodular iron stone*, found at a number of localities on the Mankato and Lesueur rivers, in beds varying from one to three feet in thickness.

"There are several *salt springs* on Soap Creek, in Davis county, but the proportion of brine is small. By boring, a stronger water might possibly be obtained.

"Though deficient in productive minerals, such as are reserved by the Land Office, a large proportion of this district consists of *rich, fertile soil*, well adapted to all agricultural purposes. Of such is a large portion of the Iowa coal field, and the region lying north both of that and of the Illinois coal field, as far as the Falls of the eastern tributaries of the Mississippi. Some of the lands of the Des Moines and Cedar rivers can be scarcely excelled for fertility, perhaps, in the world.

"On the other hand, there are portions of the district, chiefly in the vicinity of the sources of the Chippewa and Black rivers, and of the streams flowing north into Lake Superior, which are, in fact, so hopelessly arid, that in our generation they will as-

surely never be purchased or occupied. These refuse lands amount to upwards of *fifteen thousand square miles*.

"A circumstance which to some may seem trivial, will delay, to a considerable extent, the settlement of a portion of the district. It is the prevalence, especially on the Upper Wisconsin, Chippewa, St. Croix, and Black river countries, and thence north to Lake Superior and to the British line, of *venomous insects*, in such insufferable quantities, that, at certain seasons, they destroy all comfort or quiet, by day or by night. Among the pineries of Northern Wisconsin, and more or less throughout the whole of the above designated region, the *buffalo-gnat*, the *brulot*, (so called by the voyageurs, from *bruler*, to burn, the sting producing a burning sensation,) and the *sand-fly*, to say nothing of the myriads of gigantic mosquitos, carry on an incessant war against the equanimity of the unfortunate traveller. I, and other members of the corps, when unprovided with the necessary defence, have had our ears swelled to two or three times their natural size, and the line of our hats marked all round by the trickling blood. It was often necessary to rise many times in the course of the night, to allay the fever of the head by repeated bathings; and, at some of the worst spots, we could scarcely have discharged our ordinary professional duties at all, without the constant protection of mosquito nettings, worn over our head and face.

"The health, even of the more marshy portions of the district, seems better than from its appearance one might expect. The long bracing winters of these northern latitudes exclude many of the diseases, which, under the prolonged heat of a more southern climate, the miasma of the swamp engenders. Perhaps the healthiest portion of the whole district is along its northern limit, where it is coterminous to the British dominions. At the Pembina settlement, owned by the Hudson's Bay Company, to a population of five thousand there was but a single physician; and he told me, that without an additional salary allowed him by the company, the diseases of the settlement would not afford him a living."

Upon looking at the map of this country we are struck with amazement at the great number of lakes of all sizes and shapes. An attempt was made to enumerate them, but was given up; however, on a space of about sixty miles square, we counted *two hundred* of these basins of water. These lakes furnish several varieties of excellent fish, which are caught by the Indians or settlers with spears, hook and line, and gill-nets. They are the abode also of myriads of water fowl, which at times annoy the voyageur with their discordant cries.

In order that the reader may have some idea of the amount of labor performed by Dr. Owen and his corps, and also to show

the extent of the coal fields in this new territory, we will give a short extract from the report.

"The carboniferous limestone in Iowa, if we commence where it crosses the Des Moines, between the mouth of that river and the Missouri line, ranges north as far as the confluence of the Iowa and English rivers; then, for about forty miles, it is lost to surface view; reappearing, on the Iowa river, in Tama county, and ranging thence in a northwesterly direction, towards the head of that stream; there, however, it is, to a considerable extent, covered up from view by the drift, showing itself in such cases only in the cuts of streams. From the source of the Iowa, it sweeps off in a westerly course, towards the Missouri; its northern boundary on that stream being a few miles below the mouth of the Sioux river; thence it bears south, down the valley of the Missouri, to the State line.

"This zone of limestone has an average width of twenty-five miles; it circumscribes, with a short interval, the great coal field which occupies the whole of southwestern Iowa, extending north to latitude $42^{\circ} 30'$; and separates it from the Illinois coal field by a calcareous belt, varying in width from twenty-five to fifty miles.

"Of this coal field (in Iowa alone, not including its extension south into Missouri), the dimensions are as follows: Its average width from east to west is less than *two hundred miles*; its greatest length from north to south, about *one hundred and forty miles*; its contents, about 25,000 square miles. It extends, measured in a direct line, nearly two hundred miles in a northwesterly direction, up the valley of the Des Moines.

"After crossing the Iowa boundary line into Missouri, the boundary line of this coal field bears nearly south, through Clark, Lewis, and Marion counties, to near the junction of the three forks of Salt river; thence through the western part of Ralls county, towards the head waters of Rivière au Cuivre, in the eastern part of Audrain county, and northwestern corner of Montgomery county; thence it sweeps in a southwesterly curve through Calloway county, towards the Missouri river, which it crosses near its confluence with the Osage; leaving a belt of country some ninety miles wide, between this coal region and the outcrops at Charbonnière, and the coal pits worked on Rivière des Pères, in St. Louis county. These are, in fact, outliers of the Illinois coal field. From the Missouri river the boundary bears, with a westerly curve, up the valley of the Osage, north of that river, which it crosses, but for a very limited distance only, at three points: in Camden county, near the mouth of Niangua; in St. Clair county, near the mouth of Sac river; and in Bates county, near the confluence with the main river of the Little Osage. Thence the line bears, with a northerly curve,

towards the western confines of Fayette, re-crossing the Missouri at Wellington; thence up the valley of that river, keeping from ten to twenty-five miles from the river, to the State line."

Gypsum is found in a few places. On the Upper Des Moines, below Lizard Fork, a large and very rich bed is formed; its average thickness, over an area of two miles square, may be put at twenty feet, which would give 2,787,840,000 of cubic feet. Or, as the specific gravity of this plaster stone is about 2.2 (giving 137.5 pounds as the weight of a cubic foot of gypsum), upwards of a hundred and ninety millions of tons.

The following extract will give some idea of the fertility of some portions of the country, and its adaptation to agricultural purposes.

"The carboniferous rocks of Iowa occupy a region of country which, taken as a whole, is one of the most fertile in the United States. No country can present to the farmer greater facilities for subduing, in a short time, wild land. Its native prairies are fields almost ready made to his hands. Its rich, black soil, scarcely less productive than that of the Cedar Valley, returns him reward for his labor a hundred-fold. The only drawback to its productiveness is that, on some of the higher grounds, the soil, partaking of the mixed character common to drift soils, is occasionally gravelly; and that here and there, where the upper members of the coal-measures prevail, it becomes somewhat too siliceous.

"The general agricultural character of the country on the Red River of the North is excellent; the land being highly productive, especially in small grain. The principal drawbacks are occasional protracted droughts, during the midsummer months, and during the spring, freshets, which, from time to time, overflow large tracts of low prairie, especially near the 'Great Bend.' Its tenacious subsoil insures its durability.

"The land best adapted for wheat and most small grains, and in which the proportion of earthy, saline, and organic matter is distributed in the best proportion to impart fertility and durability, is the soil based on the calcareous and magnesio-calcareous rocks, and which particularly characterises the country bordering on the Mississippi and its tributaries, between the 41° and 45° of latitude, with an average width of twenty to thirty miles west of the Mississippi.

"The rural beauty of this portion of Iowa can scarcely be surpassed. Undulating prairies, interspersed with open groves of timber, and watered with pebbly or rocky-bedded streams, pure and transparent; hills, of moderate height and gentle slope; here and there, especially towards the heads of the streams, small lakes, as clear as the rivers, some skirted with timber, some with

banks formed by the green sward of the open prairie; these are the ordinary features of the pastoral landscape.

"For centuries, the successive natural crops of grass, untouched by the scythe, and but very partially kept down by the pasturage of buffalo and other herbivorous animals, have accumulated organic matter on the surface soil to such an extent, that a long succession, even of exhausting crops, will not materially impoverish the land. The prairie-sod, matted and deep-rooted, usually requires from *six to eight yokes of oxen* effectually to break it up.

"The future farms of Iowa, large, level, and unbroken by stumps or other obstructions, will afford an excellent field for the introduction of mowing and reaping machines, and other improved implements calculated to save the labor of the husbandman; and which, in new countries reclaimed from the forest, can scarcely be employed till the first generation shall have passed away.

"In this connection, it may not be out of place to remark, that, so far as the mere support of life is concerned, taking into account the amount of labor required to do it, this region is equal, if not superior, to many portions of the settled States. The *rice fields*, which require neither sowing nor cultivation, only harvesting, cover *many thousands of acres*, and yield all that is essential for breadstuffs; but, in addition to this, *corn* can be cultivated with as little or less labor than in the Middle States. *Potatoes*, far superior in size and flavor to any I have ever seen in the Ohio Valley, are grown with little attention; and turnips and beets produce abundantly. '*The Rice Lakes*' are most liberally distributed in the sections about the head waters of the Red Cedar, Nemakagon, St. Croix and Snake rivers, in the south, and the sources of Big Fork and Red Lake rivers in the north. The Indians make annual visits to the rice regions toward the end of August, for the purpose of gathering a supply for the winter. These fields also attract immense numbers of water-fowl."

Nature has also made ample provision for the sustenance of life by a supply of esculent roots, such as the swan potato; also artichokes, whortleberries, huckleberries, immense fields of cranberries of the most delicious quality, sugar maple, &c. The Indians and half breeds make their sugar in the spring of the year, in March and April; and an industrious man can make during the season from *one thousand to fifteen hundred pounds*, the trees producing from four to ten pounds each. Sugar is with the Chippewa an article of food; and the sugar-making season is hailed with joy, as putting a period to the starvation of winter.

The following additional particulars being quite interesting

about the growth and habit of the *wild rice*, we cannot refrain from introducing it. It is found in the botanical list of Dr. C. C. Parry:

"*Lizania aquatica*, wild rice—'Pshu' of the Sioux; 'Manomin' of the Chippewas. This aquatic grass, not uncommon in the northern United States, acquires in the northwest an economical importance second to no other spontaneous production. It is the only instance in this region of a native grain occurring in sufficient quantity to supply the wants of ordinary consumption. It is particularly abundant on the lake-like expansions of rivers, towards their sources, which give such a marked feature to the distribution of these northern streams, and is so grandly illustrated in their main type, the Mississippi. It seems to select, by preference, the lower terminations of these expansions, which generally debouch by a narrowed outlet, and considerable fall, constituting rapids. It is in these situations best exposed to the proper degree of inundation, and finds a suitable bed of the slimy sand, in which it grows most readily. It is rarely met with on inland lakes which have no outlet. As an article of food it is highly palatable and nutritious, being generally preferred to the commercial rice. The grain is long, slender, of a brown color. In boiling, it puffs out to a pultaceous mass, and increases its bulk several times. It flowers in August, and is ready for gathering in September, which is conveniently done in canoes, the standing stalks being bent over the sides, and the grain beaten in. Its productive fields, at this season, harbor a great number of wild fowls, which obliges those who wish to secure a full crop to anticipate the gathering season, by tying up the standing grain into bundles, which gives at the same time a claim to the crop. When gathered, it is subjected to a process of parching and threshing, which, with the imperfect means at the command of the Indians, is the most tedious part of the business. This grain has been frequently introduced to the attention of cultivators, and is worthy of notice, not only for the value of its products, but the peculiar nature of the soil to which it is adapted, being necessarily unfit for any of our ordinary cultivated grains. As a native of the northwest, it is undoubtedly susceptible of increased production, and will, doubtless ere long, constitute as important an element in the civilized wealth of this region, as it now does in adding to the comforts of its wild inhabitants."

It may be as well to state, that Dr. Parry has arranged, in regular order, a list of the plants of this region, and they amount to *seven hundred and twenty-seven*, included in *one hundred and six* natural orders; many of these have never before been referred to this region. Amongst these plants is included the *lead plant*, *amorpha canescens*, and quite noted in Iowa and Wisconsin, from

the prevalent belief that it points out the locality of minerals. Its value as a mineral indication may be summed up in this. It attaches itself with most luxuriance to rocky crevices and spots about which the peculiar dry earth, indicating a mineral vein, exists, and the miner is thus guided in making his excavations. Farther than this, any definite relation with the lead-bearing rock is sufficiently disproved by the extensive geographical range of this plant, from British America to Texas.

Particular attention was directed to the medicines and medicinal plants employed by the native tribes of Indians in the treatment of disease. But it was then as it ever has been with other explorers and observers, they found out little or nothing. Medicine, in the mind of the Indian, is always connected with *superstitious observances*, and is inseparably blended with his *religious* notions. The efficacy of the simplest remedies are attributed to some supernatural agency, and, as a consequence, more credit is given to the *manner of administering*, or the unmeaning ceremonies connected with it, than to the thing itself. With all this, an air of mystery is thrown over the subject, combining to render reliable information, on the one hand, difficult to obtain, and on the other, good for nothing when obtained. The subject, in fact, belongs more properly to the *moral* than the *natural* philosopher. The *medicine-men* are always *jugglers* or *priests*. And yet we have our papers crowded with advertisements and puffs of *celebrated Indian panaceas*, and Indian tonics, and Indian elixirs, and Indian catholicons, as though all our knowledge had been derived from these poor ignorant savages, and they alone had this true secret of curing diseases and prolonging life. It seems really that the whites are as fond of *mystery* and *jugglery* as the poor red men, and as soon as the ingredients of a nostrum are made known, its virtues are powerless.

The *forest trees* of this region are not different from those in the northern and New-England States:—Pine, cedar, fir, cypress, elm, beech, maple, sugar-maple, larch or tamarack, elm, ash, alder, box alder, cotton-wood, gum, birch, aspen, oak, bass-wood, poplar, white cedar, large "canoe" birch. The sugar-maple is an indication of good soil. In the region along the Red River of the North, from the mouth of the Psihu to the settlements, the air is scented, during the months of June and July, with a delightful perfume, arising from the *wild roses*, which form a thick shrubbery along the banks of the stream.

As we live in a utilitarian age and nation, and as our journal is devoted to utilitarian purposes and objects, we shall devote some space to the *lumber trade* and produce of the *lead mines*.

"On the Wisconsin river are (in 1847) 24 mills, running 45

saws, and sawing about 20,000,000 feet of lumber, worth at the mills about \$6 per M., and 3,000,000 of shingles, worth \$2 per M. Total for that year about \$125,000.

"On Black river and its tributaries there were 13 mills, running 16 saws, and turning out 6,350,000 feet of lumber annually; 1,500,000 shingles, and 45,000 feet of square timber, all worth about \$40,125.

"On the Chippewa and its tributaries there were 5 mills and 7 saws, which made 5,350,000 feet of lumber, 3,100,000 laths, 1,300,000 shingles, and 50,000 feet of square timber; there are also sent to market about 2,000 logs; all worth \$56,900.

"On the St. Croix and its tributaries, 5 mills and 12 saws were in operation, which cut during 1848, 7,700,000 feet of lumber, 6,000,000 of laths, 100,000 shingles; besides 15,000 logs taken to market; all making \$103,800. By the time this lumber reaches the market at St. Louis, its value is doubled, so that it will amount to a round total of half a million of dollars.

"According to the calculation made in the pine regions of New-York and the New-England States, of the quantity of lumber which one acre of ground will produce, *five thousand acres* of land must annually be denuded of its timber to furnish the lumber sent into market from the Chippewa Land District. A portion of this land, when deprived of its timber, is almost worthless.

"The Chippewa Land District is the country which must ultimately supply, with pine lumber, the whole Mississippi country below the Wisconsin river, and north of the mouth of the Ohio; for south of the Wisconsin there are no pine lands of any extent. The future importance and value of the trade can well be appreciated by those who have witnessed the rate of immigration into these vast and fertile plains of the United States, particularly when they consider the preference given to wooden buildings in the West, and the immense consumption of building material, not only in larger cities, but also for the construction of those numerous towns and villages, which spring up, as if by magic, along the shores of the Mississippi and its tributaries.

Besides these mills, there are others on streams emptying into Green Bay, running 58 saws, turning out 33,488,000 feet of lumber, worth \$200,928. Owing to the cold weather in the winter season, the saws run only about half the year, or one hundred and eighty-two days, but they run day and night; they employ about 670 laborers in all, i. e. these last 58 saws.

Dr. Owen has ascertained the locality of lead ore in several different places in the region surveyed, and now under consideration, on the Mississippi river, Turkey river, Kickapoo river, Yellow river, Upper Iowa river, Wazi-oju river, Bad Axe

river, and on the Iowa river in the Winnebago reserve, near the town of Lansing. Copper was also found at some of these points.

The amount of lead actually shipped from the mines at Galena, has been as follows :

Years.	Pigs of Lead.	Years.	Pigs of Lead.
1841.....	452,814	1847.....	771,679
1842.....	447,859	1848.....	680,245
1843.....	561,321	1849.....	628,934
1844.....	624,601	1850.....	569,521
1845.....	778,460	1851.....	472,608
1846.....	730,714	1852.....	400,000

Owing to the obstruction of the stream by ice, these shipments are made in nine months only, and sometimes less. The decrease for the last years has been caused, first, by laborers going to the war in Mexico, and afterwards to the gold mines of California.

As a pig of lead will weigh, on an average, 70 lbs., it appears, from the above table, that the annual produce has varied, in the twelve years enumerated, between nearly 54,000,000 lbs. and 28,000,000 lbs.

The constant theme of remark, whilst travelling in the region of the Upper Mississippi occupied by the lower magnesian limestone, was the picturesque character of the landscape, and especially the striking similarity which the rock exposure presents to that of ruined structures.

"The scenery on the river Rhine, with its castellated heights, has furnished many of the most favorite subjects for the artist's pencil, and been the admiration of European travellers for centuries. Yet it is doubtful whether, in natural beauty of landscape, it is not equalled by that of some of the streams that water this region of the Far West. It is certain that, though the rock formations essentially differ, Nature has here fashioned, on an extensive scale, and in advance of all civilization, remarkable and curious counterparts to the artificial landscape, which has given celebrity to that part of the European continent.

"The features of the scenery are not, indeed, of the loftiest and most impressive character—such as one might expect to witness on approaching the source of one of the two largest rivers on the globe. There are no elevated peaks, rising in majestic grandeur; no mountain torrents, shrouded in foam and chafing in their rocky channels; no deep and narrow valleys, hemmed in on every side, and forming, as it were, a little world of their own; no narrow and precipitous passes, winding through circuitous defiles; no cavernous gorges, giving exit to pent up waters; no contorted and twisted strata, affording evidence of

gigantic uplift and violent throes. But the features of the scene, though less grand and bold than those of mountainous regions, are yet impressive and strongly marked. We find the luxuriant sward clothing the hill-slope even down to the waters' edge. We have the steep cliff, shooting up through it in mural escarpments. We have the stream, clear as crystal, now quiet, and smooth, and glassy, then ruffled by a temporary rapid; or, where a terrace of rock abruptly crosses it, broken up into a small romantic cascade. We have clumps of trees, disposed with an effect that might baffle the landscape gardener, now crowning the grassy height, now dotting the green slope with partial and isolated shade. From the hilltops, the intervening valleys wear the aspect of cultivated meadows and pasture grounds, irrigated by frequent rivulets, that wend their way through fields of wild hay, fringed with flourishing willows. Here and there, occupying its nook on the bank of the stream, at some favorable spot, occurs the solitary wigwam, with its scanty appurtenances. On the summit-levels spreads the wide prairie, decked with flowers of the gayest hue—its long, undulating waves stretching away till sky and meadow mingle in the distant horizon. The whole combination suggests the idea, not of an aboriginal wilderness, inhabited by savage tribes, but of a country lately under a high state of cultivation, and suddenly deserted by its inhabitants—their dwellings, indeed, gone, but the castle-homes of their chieftains only partially destroyed, and exhibited, in ruins, on the rocky summits around. This latter feature especially aids the delusion; for the peculiar aspect of the exposed limestone, and its manner of weathering, cause it to assume a resemblance, somewhat fantastic indeed, but yet wonderfully close and faithful, to the dilapidated wall, with its crowning parapet, and its projecting buttresses, and its flanking towers, and even the lesser details that mark the fortress of the olden time."

Dr. Owen has discovered fossil remains of extinct races of animals, different from any found in the eocene formations about Paris, or any of the European deposits. Also, several shells resembling those hitherto known, but not the same. His remarks on this subject are so pertinent and so beautifully written, that we with pleasure give place to them:

"The study of organic remains in rocks is, indeed, a most beautiful, a most fascinating research. What can be more extraordinary, than that we, the generation of the nineteenth century, should exhume from out the hard substance of the solid rocks the delicate forms of organic beings of bygone ages, and display to the wondering eye of the naturalist even their minute anatomical details! And this, not alone of races which inhabited this earth in times immediately preceding the human

epoch; we are even permitted to contemplate, and restore to our perceptions, the very fishes, mollusks, and corals that swarmed in the carboniferous seas millions of ages ago. The animal matter composing their tissues and bones is indeed gone, but the simultaneous mineral infiltrations preserve a perfect counterpart. We can depict those remarkable and elegant forms of vegetation which constituted the forest that fringed the shores of that same treacherous and overwhelming ocean. We seize them in the very act of uncoiling their fronds, and unfolding to the admiring gaze of the botanist that luxuriant canopy of foliage that once waved in the sea-breeze, nurturing their stems. We accomplish even more than this: we can read the records of myriads of the lower order of animals, that date their existence yet further back than the time that gave growth to trees, now stored up as mineral fuel in the bowels of the earth—to times at least as long prior to the coal formation as that geological era is antecedent to the present time; we assign to each its place in the zoological system, and fill up gaps in the existing orders of the animal and vegetable kingdom.

"To think that we, at this day, can demonstrate the structure of the eye of some of these—the most ancient races—and even count the thousand lenses by which light was concentrated to the optic nerve, is truly astonishing! Is it then surprising that it should engage the most earnest attention of the closest philosopher, and awaken the enthusiasm of the enterprising explorer?"

"But palæontology is not a study of mere curious, scientific inquiry; it has also its practical inferences, and these of the most important character, with their matter-of-fact bearings. For example, the *fossil corals* are found imbedded in the subcarboniferous limestones, and near the top of the series, *always* under the true coal-bearing beds, never above these, or included in them, and nowhere else. This geological fact holds good not only in Iowa, but throughout the entire range of the subcarboniferous limestones in Indiana, Illinois, Kentucky and Tennessee. In not a single instance, from the range of the Cumberland Mountains on the east, to the interior of Iowa on the west, has a workable bed of coal been discovered in a position beneath the strata of limestone containing these corals. In these organic remains, then, we find the surest and most unerring guide in the search after this invaluable article of commerce, that warms our houses, that drives our steam engines, by which we navigate our rivers, lakes, and oceans; that propels the machinery by which we weave our fabrics; that reduces our iron, by which we cultivate our soil and carry on every conceivable mechanical operation; that refines our metals, that contributes to the production of both the necessities and luxuries of life, and by which we transmit intelligence, with the swiftness of

lightning, to stations the most remote. Without the knowledge of this fact, millions of dollars might be expended—have been expended—in fruitless and hopeless mining operations, after geological incompatibilities."

In the new and far-off region of Nebraska, in a section called *Mauvaises Terres*, or Bad Lands, Dr. Owen discovered, and has described, one of the most singular and picturesque geological freaks ever known:

"From the high prairies, that rise in the background by a series of terraces or benches, towards the spur of the Rocky Mountains, the traveller looks down into an extensive valley, that may be said to constitute a world of its own, and which appears to have been formed, partly by an extensive vertical fault, partly by the long-continued influence of the scooping action of denudation.

"The width of this valley may be about thirty miles, and its whole length about ninety, as it stretches away westwardly towards the base of the gloomy and dark range of mountains known as the Black Hills. Its most depressed portion, three hundred feet below the general level of the surrounding country, is clothed with scanty grasses, and covered by a soil similar to that of the higher ground.

"To the surrounding country, however, the *Mauvaises Terres* present the most striking contrast. From the uniform, monotonous, open prairie, the traveller suddenly descends, one or two hundred feet, into a valley that looks as if it had sunk away from the surrounding world, leaving standing all over it thousands of abrupt, irregular, prismatic, and columnar masses, frequently capped with irregular pyramids, and stretching up to a height of from one to two hundred feet or more.

"So thickly are these natural towers studded over the surface of this extraordinary region, that the traveller threads his way through the deep, confined, labyrinthine passages, not unlike the narrow, irregular streets and lanes of some quaint old town of the European continent. Viewed in the distance, indeed, these rocky piles, in their endless succession, assume the appearance of massive, artificial structures, decked out with all the accessories of buttress and turret, arched doorway and clustered shaft, pinnacle, and finial and tapering spire! One might almost imagine oneself approaching some magnificent city of the dead, where the labor and the genius of forgotten nations had left behind them a multitude of monuments of art and skill.

"On descending from the heights, however, and proceeding to thread this vast labyrinth, and inspect, in detail, its deep, intricate recesses, the realities of the scene soon dissipate the delusions of the distance. The castellated forms which fancy had conjured up have vanished; and around one, on every side,

is bleak and barren desolation. Then, too, if the exploration be made in midsummer, the scorching rays of the sun, pouring down in the hundred defiles that conduct the wayfarer through this pathless waste, are reflected back from the white or ash-coloured walls that rise around, unmitigated by a breath of air, or the shelter of a solitary shrub.

"The drooping spirits of the scorched geologist are not permitted, however, to flag. The fossil treasures of the way will repay its sultriness and fatigue. At every step objects of the highest interest present themselves. Embedded in the debris lie strewn, in the greatest profusion, organic relics of extinct animals. All speak of a vast fresh-water deposit of the early tertiary period, and disclose the former existence of most remarkable races, that roamed about in bygone ages high up in the valley of the Missouri, towards the sources of its western tributaries; where now pastures the big-horned *ovis montana*, the shaggy buffalo, or American bison, and the elegant and slenderly-constructed antelope.

"Every specimen as yet brought from the Bad Lands, proves to be of species that became exterminated before the *mammoth* and *mastodon* lived, and differ in their specific character, not alone from all living animals, but also from all fossils obtained even from *contemporaneous* geological formations *elsewhere*. Along with a single existing genus, the rhinoceros, many new genera, never before known to science, have been discovered, and some, to us at this day, anomalous families, which *combine in their anatomy* structures now found only in different orders. They form, indeed, connecting links between the pachyderms, plantigrades and digitigrades. For example, in one of the specimens from this strange locality, we find united characters belonging now to the above three orders; for the molar teeth are constructed after the model of those of the hog, peccary, and baryroussa; the canines as in the bear; while the upper part of the skull and cheekbones, and the temporal fossa, assume the form and dimensions which belong to the cat tribe. Another, the *oreodon*, has grinding teeth like the elk and deer, with canines resembling the omnivorous thick-skinned animals; being, in fact, a race which lived both on flesh and vegetables, and yet chewed the cud like our cloven-footed graziers."

Other remains of animals of gigantic dimensions were found, combining the teeth of the tapir, the horse, and the hog. One of the jaw bones measured five feet, and one of the skeletons measured *eighteen feet in length, and nine feet in height*. Only one specimen of a truly carnivorous type of animals has been found as yet.

"The investigations connected with the geology of this curious country, and the natural history of its ancient fauna,

are invested with no small degree of interest, when we consider that, at the time these singular animals roamed over the Mauvaises Terres of the Upper Missouri, the configuration of our present continents was very different from what it now is. Europe and Asia were then, in fact, no continents at all, being represented only by a few islands, scattered over a wide expanse of ocean. The Atlantic seaboard of the United States, back to the mountain ranges, and up the Valley of the Mississippi as high as Vicksburg, *was yet under water*. Mount *Ætna*, that remarkable volcanic cone of Sicily, nearly 11,000 feet in height, was yet unformed, and the fertile plateau of that island, more than 100 miles in circumference, was still deep under the tertiary Mediterranean Sea. In Europe, during the period following the extermination of the eocene fauna of Nebraska, the Alps have been heaved up nearly their whole height; and in Northern India, the whole Subhimalayan range has been elevated. In South America, 9,000 feet have been added to the height of the Cordilleras, and the South Atlantic has been driven back 700 miles, while a district of country 2,500 miles in length, from the great plain of the Amazons to the Straits of Magellan, has emerged from the ocean.

"The eocene tertiary formation is of modern date when compared with the paleozoic division below the coal-measures, that is, *geologically and comparatively speaking*; estimated in time—by a human epoch—the eocene tertiary is immeasurably great—utterly beyond the grasp of our conceptions to appreciate, counted by single years, comprising, as it does, a cycle of geological events that has completely changed the whole physical geography of the world—turned continents into oceans, and oceans into dry lands; and this, not by one grand *bouleversement* of the earth's crust, but by a long series of gradual changes, which, except at certain periods of paroxysmal throes, occasionally occurring at long and distant intervals, was probably as slow and gradual as the present rising of the coast of Sweden out of the ocean, and the simultaneous subsidence of land over the bottom of the Polynesian archipelago.

"When we turn to the forms of the extinct animals of the Mauvaises Terres, which lived, as we have seen, during the dawn of the tertiary period; bearing in mind the fact, that, at the time they flourished in Nebraska, the Alps were just lifting their heads out of the ocean, how strange must it appear to the reflective mind, that the comparative anatomist, at this day, should be able to read their history—to restore them by minute descriptions, and thus embody them to the imagination as in their pristine and animated condition. Yet far more vividly do these facts come home to the individual who beholds and handles the specimens themselves. Some of them, disencum-

bered of the enclosing matrix, are still in such a perfect condition, and present so fresh an appearance, that the light is reflected back from the enamelled surface of the teeth with as much brilliancy as from highly polished steel. Were it not for their ponderous character, and their strange physiognomy, one might well suppose them to be the bones of recent animals, which had been bleached but for a season."

Having thus glanced at this magnificent report of Dr. Owen's Exploring Expedition, and given some extracts from it to show the design, style, and character of the work, we leave off as we begun, by saying, that it reflects the highest credit on every one concerned. There are many more points which might be dwelt upon: of the various beauties of the region explored; the natural stone bridges; the splendid stone arches adorning the shores of Lake Superior, and its numerous isles; the natural mounds adorning the prairies; the beautiful animals, birds and fishes, seen and tasted; together with the merry scenes of the bivouac and the camp-fire, and the hardships and privations suffered; the scanty meal; the weary and lonely journey; the frost, and snow, and ice, as well as the scorching sun; all giving variety and zest to the three years of laborious scientific employment.

Art. II.—REVOLUTION OF SOUTHERN TRADE.

A REPLY TO THE OBJECTIONS OF THE LONDON ECONOMIST AGAINST THE MEMPHIS CONVENTION OF SOUTHERN PLANTERS; AND AN EXAMINATION OF ITS THEORY OF LABOR, AS ILLUSTRATED IN THE WHITE FREE SYSTEM OF EUROPE, AND THE BLACK SLAVE SYSTEM OF THE UNITED STATES.

A RECENT number of the London Economist contains an article of some length upon the subject of the Southern Convention which assembled at Memphis on the 6th of June last. The article alluded to republishes from the London Times an extract of a letter from its New-York correspondent of the 7th of the same month, in which the motives of that Convention are ascribed by the Times' correspondent to be not a little influenced by the "silly manifestations of superficial philanthropy so pompously displayed at Stafford House." The writer of the "Economist" is not surprised that the "superficial philanthropy" has had an unfavorable influence in "the States;" "but neither the jealousy of that," he proceeds to say, "nor the political jealousy of the Northern States, is a fair commercial motive which can insure the Memphis Convention the least shadow of success."

Singularly enough, this writer, after enumerating the many commercial objects for which this Convention assembled, all of them having for their motive the extension of the commercial

intercourse of the South, in connection with the manifold enterprises contemplated by the construction of a rail-road to the Pacific—a route across the Tehuantepec Isthmus—the establishment of commercial steamers between the Southern ports and Europe—the opening a trade with the rivers Amazon, Orinoco, and La Plata, &c., &c.; singularly enough, we say, that enterprises, having for their object the extension of such vast commercial advantages, and the breaking down of huge commercial monopolies, should be stigmatized as the "*Slave-owners' project against free trade.*" Since, however, the subject of the Southern Convention is to be disconnected from the "superficial philanthropy" which surrounds the question of slavery, and is to be considered with reference to its practical results, it is of some importance to regard the commercial objections of so high an authority as the "London Economist." We are the more impressed with the importance of these objections, from the value attached to them by the republication of the article of the Economist in many of the papers throughout the Northern States; and these unaccompanied, as far as we have observed, with comment. As long as "superficial philanthropists" and mendicant fanatics, upon the subject of southern slavery, both in the United States and in Great Britain, confine their philanthropic jargon to a senseless tirade against the South, because its cotton is the growth of slave labor, they are unworthy of any other consideration than that of pity, after they have been exposed to the public derision, and consigned to public contempt, like any other class of detected impostors. To them, indeed, cotton might for ever remain a myth, as well as common sense continue a mystery. Neither of these commodities are of any possible use to such a class. With them, the world could get on just as well without either. Destroy the growth of cotton, and the grand millennium of fanaticism will have been accelerated a hundred years. The new reformers would then have a fine opportunity of testing the practicability of a novel idea. That invisible garment, which has become the invaluable necessity of our modern civilization, might be, in carrying out this destructive idea of cotton, abandoned; and the innocent simplicity of these modern Arcadians might have their natural tastes gratified by a return to the primitive days of Adam and Eve. In the absence of the hope of the immediate realization of such an idea, let them form themselves into a grand society for the encouragement of the growth of the cotton worm; that active philanthropist causing the southern planter at times great uneasiness in its periodical visitations, in destroying the prospect of a cotton crop. Should the suggestion be adopted, let penny subscriptions be made to promote the grand object.

Leaving all these fanatical absurdities, however, to weigh

down their own folly, let us turn to the opposite scale, and see how the matter is to be adjusted; and here we are brought to the consideration of the practical bearing of the views entertained by the writer of the *Economist* on this subject.

After enumerating the many obstacles which the proposed plans of commercial exchanges between the Southern States and European ports would produce—to supersede the monopoly of the cotton trade by the Northern cities of the United States and Liverpool, as far as possible—the writer goes on to point out the various dangerous innovations which such an arrangement over established regulations would create; and proceeds to illustrate, by comparison, many of the recognised principles of political economy, which he contends such an innovation would violate in commercial transactions.

Beside the difficulties growing out of these formidable obstructions, the writer of the *Economist* invokes, in behalf of the planters of the South, the experience of the history of monopoly in Europe, which he contends, should their plans be carried out, or attempted to be accomplished, would have been written for them in vain.

Without viewing this question in any light of sectional hostility, but as one having for its object the placing of southern interests upon a firmer foundation of commercial independence, and as claiming for the Southern States of this confederacy a fair understanding of their political relations with the rest of the States, and a vindication of their commercial importance, in the face of great domestic misrepresentations, before Europe; we see nothing in this "movement" which calls for such serious apprehensions of impending calamities as those anticipated by the London *Economist*. That any disturbance in the present system of commercial exchanges between the United States and England would be attended with some temporary embarrassments, there can be no doubt; but these do not justify the disastrous consequences threatened by this writer. In the examination of commercial questions, we are accustomed to hear a great deal said upon the so called established axioms of political economy in their influence upon great commercial enterprises, and in the probable effect of these upon the "established regulations of trade;" and the "*Economist*" finds a powerful argument in defence of its views in these "established axioms," as governing "established regulations," or, what it more strikingly denominates, "natural laws of commerce."

The whole history of commerce has been so rapidly written on the face of the globe, since the great changes that have occurred since the close of the eventful fifteenth century—a close of its volume, indeed, which added to its immortal pages the discovery of a new continent, and the navigation of a new

ocean to the European world; illustrating the one with the picture of a new empire in the West, and opening to the other the glories of a mighty conquest in the East—its whole history, we say, has been so rapidly written, in rapid changes since these great events, and such a powerful impetus has been given to its movements by subsequent discoveries, that it is impossible to curb its giant strides by any prescribed rule of the political economist, who, with a measure in hand, should attempt to confine its dimensions to this or that part of the new or the old world.

The regulations, growing out of the natural laws governing commercial exchanges, doubtless facilitate commercial intercourse; but these do not demand any perpetual laws, or prescribe any undeviating rule. The history of the commercial revolutions of the world has been "written in vain" for the Economist and its followers, should they entertain this idea—to adopt the language which it employs in speaking of the influence of the history of monopoly upon the southern planters; and this history, without any unnatural causes operating upon old States in every instance, but marked by a natural impetus given to the unexplored resources and undeveloped advantages of new. These have operated, not when powerful commercial communities have been on the decline, but when they had attained the height of their influence; and when smaller, or less important communities, had just begun to develop their power. To go no further back in the researches of this history than the period which changed the commercial face of Europe, in the doubling of the Cape of Good Hope and the discovery of America, let us examine the influence which these two great events exerted over the most powerful empire of commerce of modern times—the Venetian Republic. Her colonies and factories forming a chain extending from the head of the Adriatic to the Black Sea, and from Suez, along the Red and Arabian seas, to the Indus. This great power, which had been dictating commercial laws to the world—which had vanquished, if not annihilated all rivals, began to find her commercial importance wane, not so much at this period by foreign war or internal corruption, which subsequently followed, as by the *change given to the course of trade* by an inferior European power. The discoveries which were calculated to advance the commerce of the world for centuries, were regarded by her as calamities overcoming her to decide her fate. In establishing numerous ports in Africa and the Indies, from the Cape de Verdes to Canton, scarcely had a quarter of a century elapsed since the celebrated voyage of Vasco de Gama, than the Portuguese commerce commanded an immense area of coast, which the Venetian Republic but recently controlled. Failing in all her naval resources to place a

power which had in thirty years become, in respect to the Indian commerce, what Venice had been, she attempted to negotiate with Lisbon for the purchase of all their Indian products, with the privilege of *monopolizing their sale with other nations*.

We are prepared for an answer to these allusions to a comparatively remote period of commercial changes, that they bear no analogy to the movements of the present day; and that they were brought about by a combination of circumstances, and these mainly controlled by natural causes. However much force there may be in this proposition, and whatever influence there is to be ascribed to natural laws governing commercial transactions, yet if the written history of any movement which has affected the destiny of mankind is worth anything, it is in the analogy which can be traced, however remote, in its results upon its age, and to the subsequent changes which have marked the progress of the world. Thus, there may be found no direct connection with the period to which we allude and the commercial events which mark the present era; yet there can be traced some resemblance, though in a remote degree, to that gigantic agency which the Venetians sent to Lisbon to acquire, of the commerce of the Indies, for the rest of Europe, and the monopoly, as agents, *for the rest of Europe*, which one port in England enjoys, of the great staple product of the South of the United States.

A great advancement in navigation, it is true, and great advantages accruing to the Portuguese therefrom, followed by the conquests which daring commercial enterprises enabled them to achieve in the East, had much to do, doubtless, in changing the commercial face of Europe in the beginning of the sixteenth century; and these wonderful achievements may have been wrought, by carrying out the favorite theory of the writer of the *Economist*, through following the "natural laws" of commerce.

But what are the "natural laws of commerce?" It is a very comprehensive code, and not limited to the mere discoveries of a day, or the advancements of an age. The "natural laws of commerce" taught the world to follow the boundless track of Columbus across the Western Continent; but before he led the way it was unnatural to believe it existed. They taught the European world to follow another intrepid navigator around the Cape of Tempests, as the Cape of Good Hope was called before Vasco de Gama doubled it, directing a new course to the East. The "natural laws of commerce" were again governed, when a small vessel of 300 tons burthen sailed from a southern port in 1819, to cross the ocean by steam, and which was subsequently followed by steamers of the largest burthen, crossing in the period of nine days, a few hours and some minutes, which

are at the severe calculation of *exactly* the correct number, by enterprising owners and rival commanders; and yet, before the success of this ocean steam navigation, the so called "natural laws of commerce" had not discovered its practicability. On the contrary, many who spoke for "natural laws" and "established customs," denounced such an enterprise as a "foolish attempt" that would interfere with them,—as impracticable and as chimerical.

The same "natural laws of commerce," which followed the discovery of America; the doubling of the Cape of Good Hope; the navigation of the ocean by steam; and the other great events of the present and the past age, will follow the building of the rail-road to the Pacific—the opening of the great commercial treasures which are locked up in the waters of the Orinoco, the La Plata, and the Amazon—the route across the Tehuantepec isthmus—the extension of the resources of the Southern States beyond the commercial limits to which they are now circumscribed by the "established customs" of those who have abused and profited by them. The so called "natural laws," indeed, would have left the sun a mystery to the earth, and the ocean a problem to the world, had not a modern astronomer traced the relation of the one to the laws governing the universe; and a modern navigator penetrated so far into the depths of the other, as to discover the hidden mystery which shut out from the knowledge of all, but the All-seeing Eye, the nestling place upon its western bosom, of a new-born world.

Leaving the general themes which all these interesting inquiries suggest, however, we shall proceed to the examination of a branch of the London Economist's article, which, for its numerous fallacies, we shall quote entire, so that the impartial and intelligent reader may be enabled to judge of the strength of the grounds upon which they are attempted to be established:

"It is pitiable," proceeds the writer, "but not inexplicable, to see the new community in the States adopting the exploded errors of the old communities of Europe. The notion of making trade flourish by regulations, and of enriching individuals and nations by monopolies, to extort something from somebody else, is given up in Europe—*except amongst workmen*, who combine and strike just like the Memphis Conventionists, and amongst the statesmen of the Czar, whose country is yet too barbarous to be able to appreciate any kind of freedom. The explanation of such opinions being still cherished *in the States, in Russia, and amongst ignorant workmen* is, that all of them are in much the same stage of civilization. The real physical facts on which civilization depends, are the proximity and rapid communication between men. Now, in the States and in Russia, the population is yet relatively small in comparison to the surface of the country occupied; and amongst workmen there is comparatively—from want of time, intense occupation in daily labor, and other causes—little intellectual communication. They are all, therefore, likely to fall into similar errors, and

to imagine that strikes, monopolies, regulations, and unions, can produce results, which those who live in close and continual contact with others, and with all the business of life, know are brought about by general laws, totally different from strikes, combinations, or regulations. Regulations cannot influence the seasons, nor make men industrious. Those in question are generally intended to obtain for some parties the rewards of industry without being industrious. They are to procure by violence towards men, what nature has decreed to be the gain of those who wrestle peacefully with her. Such errors, founded on the expectation of obtaining by force and cunning from other men the natural rewards of toil, are common amongst *all half-barbarous people*; and are found, accordingly, amongst *the operatives who strike, the planters who combine, and the arbitrary rulers of Russia, who never communicate freely with any persons.*

"The planters have amongst them *another element of barbarism and error.* They are accustomed to obtain their ends by the use of coercion. Slave-labor is necessarily coerced labor; and the planters, from coercing Sambo, fall naturally into the error that they can coerce the market. But the use of one coercion is incompatible with the other. The slaves cannot be coerced without being continually maintained. They are costly instruments of production, and the commodities they raise must be sold to procure them clothing and subsistence. A slave establishment that produces all the commodities it requires, and sends nothing to market, may be independent; but the instant it works for a market, it becomes dependent on that both for its sales and its purchases. As the planter must provide for his population, he must often sell his produce for that purpose. A slave population hampers its owner in more ways than one, and there is some reason to believe that the low price at which slave-raised produce is sold, is the consequence of the necessity which the slave-owner is under to sell, in order to maintain his people. The responsibility of the employer of free labor is at an end when he has paid the covenanted wages; and his greater advantages in dealing in the general market are exemplified, *that there are more fortunes made by the employers of free labor, than by slave-owners.* The Astors, the Girards, and the Longworths, are the millionaires of the States; as the Rothschilds, the Lloyds, the Barings, are the millionaires of the world—not the slave-owners, however wealthy, of Carolina, Cuba, or the Brazils. The bondage of the planters to their own slaves will prevent them from becoming the masters of the market; and meeting in convention at Memphis, will not lessen their dependence on the capitalists of New-York and Liverpool. *Their Convention is a foolish attempt to turn trade from its course, which was beyond the power of Bonaparte, and it will not be compassed by the planters.*"

In order to mark the more glaring inconsistencies of these statements, we have placed a portion of them in italics. "The notion of making trade flourish by regulations, and enriching individuals and nations by monopolies, to extort something from somebody else, is given up in Europe—except amongst workmen who combine and strike, just like the Memphis Conventionists," &c. &c.—"and this condition of semi-barbarism, shared equally by the ignorant workmen of Europe, the statesmen of the Czar of Russia, and the Memphis Conventionists, is not inexplicable," as existing in the "new community" of the States; as the writer of the Economist affectedly calls the southern portion of the United States confederacy. And why not "inexplicable?" "That all of them are in much the same stage of

civilization." We shall not stop to inquire how far the advanced state of civilization in Europe has left the "ignorant workman" in a state of semi-barbarism. We shall leave the "real physical fact" on which that problem depends, to be elucidated and explained by the writer of the Economist himself. We notice this part of his singular proposition more particularly, in his theory about the institutions of the Southern States, to mark how strangely it contrasts with a subsequent theory he advances, in favor of free labor, as that freedom exists among the "ignorant workmen" of Europe, and the free labor of the Northern States. And what is the great virtue which the Economist discovers, in support of his European free labor system, which leaves the "ignorant workmen" in a state of semi-barbarism? Why, it produces the Rothschilds and the Barings in Europe, who are the bankers of the world; and as it exists in the United States, certainly untrammelled by the elements of barbarism and ignorance, as represented to be its characteristics in Europe, it produces such *millionaires* as the Astors, the Girards, and the Longworthys!

Without caring to know how far the planters of the South should consider it a source of congratulation, that their "communities" are exempt from a "semi-barbarous" system, which reduces *white free labor* in Europe to such a state of social degradation, and which, as it exists in the north of the United States, has claimed for its chiefest merit that it produces such *millionaires* as the Astors, the Girards, and the Longworthys—without caring to know how far the results of this system affect the southern planter, it would be a matter of interesting inquiry to examine how much the "ignorant workmen" are benefited by it. It may be a source of great pride to point to the wealth of *millionaires*, as the result of a great system of free labor; but we cannot see the extent of that boasted advancement in civilization, which leaves the "elements" of that system "ignorant" and "half civilized;" and advances those who promote it to the grade of the "world's *millionaires*."

But "the planters have amongst them another element of barbarism and error. They are accustomed to gain their ends by the use of coercion." Here we have a reversal of the principle which governs free labor in Europe, and which illustrates slave labor in the South of the United States; and what does it establish? That the free labor of Europe gains its end by "combinations, regulations, strikes and unions;" and here it meets upon the same ground of "barbarism" of the planters of the South, who gain their ends by the same means. But mark the difference of the working of those two opposite systems—the one coerces the capitalist, the other coerces the laborer; and observe the results—the one equally "ignorant" and "bar-

barous" coerces "the world's millionaires," and the other "from coercing Sambo, falls naturally into the error that they can coerce the market."

But again, we are told by the Economist that "the use of one kind of coercion is incompatible with the other—the slaves cannot be coerced without being continually maintained. . . They are costly instruments of production, and *the commodities they raise must be sold to procure them clothing and subsistence.*"

Whatever may be the "incompatibility" of one "coercion" with another, here we have the full admission of the London Economist in favor of the slave system of the South, that "the commodities they raise must be sold to procure them clothing and subsistence." Can as much be said in favor of the free white labor of England? Can it be said of them, that when crops fail, when manufactures cease to flourish, when a panic seizes the money market, and capital becomes grasping, and monopoly unrelenting, that "the commodities they raise must be sold to procure them clothing and subsistence?" No! It is too true, to quote the writer of the Economist, "that the responsibility of the employer of free labor is at an end when he has paid the covenanted wages." Yes, there his responsibility ends, and leaves the white laborer to perish in his necessities, or urges him to rapine, or to murder, in his "ignorance" and his "barbarity."

But all these deleterious results deduced from the Economist's theories of labor, find one great compensating advantage over all others, in the fact "that there are more fortunes made by the employers of free labor than by slave owners." This may be true; but it is no great argument in favor of any system of labor over another, however much its superiority may be lauded by the use of specious terms to convey its important advantages, that it produces in the north of the United States the Astors, the Girards, and the Longworthys, the "millionaires of the States," and in Europe the Rothschilds, the Lloyds, the Barings, "the millionaires of the world." It may indeed, admitting its truth, concentrate enormous capital into a few hands; and the "free system," which depends upon such unequal results to the laborer and the employer, must be "coercive" in the extreme; and forced, as we know it frequently has been, both in the United States and in Europe, into "combinations, unions, strikes," &c., &c., to "gain its ends."

Notwithstanding that such a system produces such enormous capitalists, the explanation of the opinions being cherished by those who adopt it, and contribute to make its millionaires, that is, in forming themselves into "unions, and regulations, and combinations," is found in the fact that they, the "ignorant workman," the "States" and "Russia," are "all of them in much

the same stage of civilization." Without pausing to acknowledge the compliment, among the many thus undeservedly paid to the South, we would ask the Economist to explain what relative condition it considers the working people to hold to the rest of the population of Europe in the scale of civilization? In their great proportion they must constitute a most important "element" of the whole system of European civilization and government; and it is no satisfactory answer to the question to say, that they occupy the relative condition of semi-barbarism to the rest of the inhabitants. Nor is the problem, with any more satisfaction, solved in the proposition upon which the writer claims the real physical facts of civilization to depend, viz.: "the proximity and rapid communication between men."

Admitting all the force of this proposition, yet we are at a loss to find its full explanation as far as it refers to the great body of the European people, in the statement that "amongst workmen there is comparatively, from want of time, intense occupation in daily labor, and *other causes*—little intellectual communication."

It would be difficult to find more controlling causes for bringing men together than those assigned by the Economist for keeping them apart. They labor in great cities and large towns; their "communication" may not be the most "intellectual," but it is rendered the more binding and sympathetic from the common necessities which it imposes. They may not have the intellectual faculty of inventing new systems of "free labor" over that which now exists; but they are urged by the natural laws of men, if not by the "physical facts" of civilization, to form themselves into "unions, combinations, regulations," &c. The truth is, there is more in those "other causes" than the writer cared to enter to explain the low grade of the workmen of Europe in the scale of civilization.

Pursuing this branch of the writer's subject, not for the purpose of exposing his fallacies, but for the sake of the argument, let us see how far his statement is sustained by the facts, relative to the South not enjoying the advantages of that "proximity and rapid communication between men," so necessarily constituting the "real physical fact" upon which "civilization depends."

Now, it may be true, "that in the States and in Russia, the population is yet relatively small in comparison to the surface of the country occupied;" but in the South of the United States it is far from obstructing that "communication" which is "rapid" enough for all purposes of intelligent intercourse; whilst the proximity of its population is sufficiently close for all purposes of mutual protection, safety, and independence of the country occupied, and if necessary, for a little more. The rapid

rail-roads and the lightning telegraphs which bring into "intellectual communication," as well as "constant intercourse," the inhabitants of the South, will serve as a sure protection against the evils apprehended by the Economist, arising from the distance between them; and enable them to avoid the danger of committing the "similar errors" fallen into by "all half-barbarous people;" including the "operatives who strike," and the "arbitrary rulers of Russia, who never communicate freely with any person."

We will conclude with a few observations upon the closing paragraph of the Economist's article:

"This Convention is a foolish attempt to turn trade from its course, which was beyond the power of Bonaparte, and it will not be compassed by the planters."

We have examined this theory of turning "trade from its course," in some general views already. The theme is too general and too interesting to trust ourselves to make a text of the Economist's closing sentence, upon which to base an analysis of its complex nature. It presents one thing, however, which can be explained without the elaboration of an argument, and that is, with respect to Napoleon's attempt to "turn the course of trade;" and the analogy which its failure to the "foolish attempt" for the same purpose, of the southern planters, is supposed to bear. The "course of trade," in the eyes of the Economist, is a course evidently which is never to be turned. Its progress is but the history of the "course of empire;" and whenever that progress has been made through conquest, through discovery, through enterprise, it has turned in every step that course. Let the Economist look at the empire of trade, which its own great commercial empire has turned; and then let it ask itself if this "course of trade" is one irrevocable law never to be changed by the changing wants and unceasing energies of man. The established laws of custom, indeed, are as formidable in the barriers to improvement, as physical obstacles are to commercial enterprise; but the energy, indomitable energy, and intellect, persevering and unceasing, combined in man, are equal to compete successfully with both. The British Empire in India dates to a comparatively short period back; the first charter of the East India Company having been granted by Elizabeth at the commencement of the seventeenth century. From that small beginning of the "United Company of Merchants of England trading with the East Indies," with its small capital of \$400,000, and its shares of £50, has sprung gradually that vast empire, which governs 150,000,000 of men. And where was this "course of trade" before the "United Company of English Merchants" turned it from its channel? It was silently flowing into the coffers of the Hollanders, and before

their conquests, into the treasury of the Portuguese ; and before they "turned its course," augmenting the monopolized wealth of the world in the commerce of the Venetian Republic. In the boundless empire which Napoleon had marked out for his sway, his imagination naturally attracted him to the East. The results which were to flow from its conquest would be the subjugation of the British power in India, and the establishment of the French. Had he succeeded in his expedition, and overthrown that empire, its consequences to the world would have been no more to "turn the course of trade" from its *original or natural channel*, than were the monopolies of the Venetians, the conquests of the Portuguese, the successes of the Hollanders, and finally the establishment of the dominion of Great Britain herself.

Having thus made the article of the London Economist the ground for the examination of the many fallacies which exist abroad with respect to the institutions of the South ; and making it the basis for the refutation of that popular error which prevails with respect to the "natural laws," and the "general laws," and the "customs," and the "usages" which govern commercial enterprises as opposed to all improvements, and persisted in, in the face of the commercial history of the world, we are constrained, for want of space, to bring our article to a close.

Art. III.—COTTON, AND ITS MANUFACTURES.

THE art of *Calico Printing*, though apparently one of the most difficult, has been practiced from a remote era. Herodotus mentions, "that a nation on the shores of the Caspian were in the habit of painting the figures of animals on their clothes, with a color formed from the leaves of trees bruised and soaked in water ; and he adds, that this color is not effaceable." There is a passage in Pliny, which, though somewhat obscure, shows that the Egyptians were fully acquainted with the *principle* of calico printing.

A process, similar to the one practiced by the Egyptians, is known to have been followed in India from the earliest times. The chemical and mechanical inventions of modern ages have been the cause of vast improvements in this beautiful art ; but in this instance, it appears, the moderns have been only perfecting and improving processes practiced in the remotest antiquity. It is believed that calico printing was not practiced in Europe till the seventeenth century, and did not commence in England till about 1675, where it is now a very important and valuable

business. In the year 1690, an establishment was commenced on the banks of the Thames near London, but the goods there printed were confined to muslins and calicoes imported from India. With a view to fostering and encouraging this branch of industry, the British government passed an act in 1700, forbidding the sale or use of foreign printed goods; and to prevent the use of foreign calicoes interfering with the domestic production of linen and woollen stuffs, an act was passed, 1721, imposing a penalty of £5 upon the wearer, and £20 upon the seller, of a piece of calico. Fifteen years after, this statute was so modified, that calicoes manufactured in Great Britain were allowed to be worn, "*provided the warp thereof was entirely of linen yarn.*" In 1774, a statute was passed allowing printed goods made wholly of cotton to be used. And this branch of trade has also been further protected by several subsequent acts, as in 1782, prohibiting the exportation of any materials used in printing, &c., and in 1783, giving bounties on the export of British printed goods; and several other statutes were enacted on the same principle, until 1787, when an excise duty of 3*d.* which was afterwards raised to 3½*d.* was imposed on all printed cottons; but the same was allowed as a drawback on the goods when exported. This act was wholly repealed in the year 1831, mainly through the exertions of Mr. Thompson, afterwards Lord Sydenham.

The old method of printing calicoes was by using blocks of wood, on the surface of which the pattern was cut in relief, like the common method of wood engraving; thus the figure was impressed upon the cloth; only one color could be used at once; and if other colors were required to complete the pattern, it was necessary to repeat the operation with different blocks. This was a slow and expensive method, and required great manual dexterity.

The great improvement in the art was the invention of *cylinder printing*, which bears nearly the same relation, in point of dispatch, to block printing by hand, as throstle or mule spinning bears to the one-thread wheel.

This great invention is said to have been made by a Scotchman of the name of Bell, and was first successfully applied about the year 1785. By subsequent improvements, this method has attained great perfection. At the present time, a piece of cloth, containing thirty-five yards, *when everything is properly prepared*, can be printed by the *cylinder machine*, in the best manner, with six or eight different colors, in less than five minutes.

The period of the establishment of the cotton manufacture in England, was one of peculiar interest to that nation, and is well worth the serious study of the political economist. At its commencement, she had just lost her American Colonies—retiring

from that contest reduced in her national means of aggression and defence to an amount exceeding *one hundred thousand men*, and *one hundred millions of money*. The French Revolution, and the frightful struggles which followed that event, brought her into collision with the other European powers, which resulted in the continental system of the Emperor of the French, having for its principal object the humbling of England by the exclusion of her manufactures from the continent. Yet the quiet but ceaseless activity of her spindles and her looms, enabled her to turn these seemingly disastrous events into sources of individual profit and national strength. Her lost colonies became her best commercial customers; and the paralysis upon the manufacturing interests of the continent produced by that very system, gave to her the lion's share in the commerce of the world. The superiority of her marine, and her insular position, enabled her to protect her commerce and manufactures, of which the larger, though the newer branch, was the *cotton manufacture*; while the profits of the latter enabled her not only to sustain the former, but also to subsidize her allies, and in the end to conquer her enemies. *The genius of Napoleon was not a match for that of HARGREAVES, ARKWRIGHT, CROMPTON AND CARTWRIGHT.**

Her manufacturing enterprise would, however, soon have found its limit, had it not been for the perfecting of the steam-engine by WATT, who, in 1785, first applied this motive power to cotton factories.

The following table from De Bow, will show the early progress of the cotton manufacture in Great Britain, prior to the invention of the spinning-jenny by Hargreaves:

Years.	Raw Cotton Imported.	Years.	Raw Cotton Imported.
1697.....	1,979,359 lbs.	1730.....	1,545,472 lbs.
1701.....	1,985,868 "	1741.....	1,645,031 "
1710.....	715,008 "	1751.....	2,976,610 "
1720.....	1,972,805 "	1764.....	3,870,392 "

The spinning-jenny of Hargreaves went into operation in 1767; and Arkwright's improvement was patented and put in operation in 1769. The influence of these, and other inventions and improvements made afterwards, on the manufacture and trade, may be seen by inspecting the following table:

Years.	Cotton Imported.	Years.	Cotton Imported.
1781.....	5,198,778 lbs.	1810.....	132,488,935 lbs.
1785.....	18,400,384 "	1811.....	91,576,535 "
1790.....	31,447,605 "	1812.....	63,025,936 "
1795.....	26,40,1340 "	1813.....	50,966,000 "
1800.....	56,010,732 "	1814.....	60,060,239 "
1805.....	56,682,406 "	1815.....	99,306,343 "

* Of cotton goods alone, the exports of England, between 1793 and 1815, amounted to two hundred and fifty million pounds sterling.

The importation of cotton into England, from all sources, since 1816, have been as follows, according to the statement of Messrs. George Holt and Co., cotton brokers at Liverpool :

Years.	Cotton Imported.	Years.	Cotton Imported.
1816.....	93,000,000 lbs.	1838.....	501,000,000 lbs.
1820.....	143,000,000 "	1839.....	388,000,000 "
1825.....	222,000,000 "	1840.....	593,000,000 "
1830.....	261,000,000 "	1845.....	721,979,953 "
1835.....	361,000,000 "	1850-51.....	800,000,000 "
1837.....	408,000,000 "		

In 1830, the exports of cotton goods were about £12,000,000. In 1840, £24,663,618, and in 1850, the total declared value was £28,252,878.

A leading English paper, in speaking of the "Great Exhibition of the Industry of all Nations," says of the department devoted to cotton goods: Though it might not have appeared so attractive to the common observer, *yet to the statesman and political economist, it was pre-eminently interesting.* The total number of cotton factories in Great Britain is 1,932; containing 20,977,017 spindles, and 249,627 power looms. The amount of capital employed is probably over two hundred and fifty millions of dollars, and the annual product of goods is about the same sum. The motive power in these factories is supplied by steam, representing 71,005 horse power; and water, representing 11,550 horse power. The total number of persons in Great Britain dependent upon this branch of industry for their daily subsistence cannot be much less than one million five hundred thousand, some writers say, more than two millions. Soon after the invention of cotton machinery, it was introduced among the various nations of the continent of Europe.

In France, the greatest manufacturing power of continental Europe, the earliest manufactures of cotton goods date from the latter years of the 17th century.* As early as 1688, we find the importations at the port of Marseilles from the Levant, included 1,450,000 lbs. of spun yarn, and 450,000 lbs. raw cotton. In 1750, they had increased to 3,831,620 lbs. of the raw material, and 3,381,625 lbs. of yarn.

Spinning frames, from the English designs, were made at Amiens in 1765; and in 1784 Mr. Martin, of that town, obtained permission to establish a cotton factory. Cotton manufactures in France did not, however, obtain to any important extent till the beginning of the present century. In 1806, a

* For the following facts touching the cotton manufactures on the continent of Europe, we are principally indebted to translations from the *Dictionnaire Geographique et Statistique* of Adrien Guibert, published at Paris in 1850, and Wilhelm Hoffman's *Allgemeine Encyclopædia*, published at Leipzig in 1848, kindly furnished by an accomplished linguist of this city. We have not been able to find later or more reliable statistics.

commission of inquiry reported that "the art of spinning cotton was completely established in France." At the present time her factories are consuming annually about 150,000,000 lbs. of cotton, and are running about 4,000,000 of spindles.

The French cotton goods stand pre-eminent for taste. The best of these are made at Mulhausen, on the Rhine, where the first printed goods were produced, about the close of the 18th century, by Koechlin & Co., celebrated dyers and printers. At that time these goods were considered by the French India Trading Company as an interference with their privileges, and they succeeded in prohibiting the use of them in France. This continued till the French Revolution took place; since when the Mulhausen calicoes have attained a world-wide reputation.

The application of chemistry to the arts of bleaching and coloring, have produced the most important changes for the French manufacturers. The great discoveries in this science by her distinguished sons have enabled her manufacturers to outstrip all their competitors in dyeing and printing.

The celebrated Turkey-red color was first applied to *cloth* in 1810, by the Messrs. Koechlins, before named. Those gentlemen have also the honor of discovering, in 1811, the art of *printing* upon Turkey-red, which is done by printing upon that color with some powerful acid; and then immersing it in a solution of chloride of lime. Neither of these agents alone affects the color; but those parts which have received the acid, on being plunged into chloride of lime, are speedily deprived of their dye, and made white by the acid of the liberated chlorine. *This is said to be one of the most beautiful facts in the chemistry of calico printing.*

In addition to their superiority of colors, the French are quite as celebrated for the combinations of them, and for the great beauty of their designs. These are so generally recognized, that English and American manufacturers are now in the practice of importing and applying them to *their* work. To show the *great* importance attached to these particular branches of manufacturing, it will suffice to state that the French government has established a *public school* for the teaching of the art of designing as applied to cotton and woollen goods, to which every child, however humble, has access, if showing the proper talent.

In Austria the cotton manufacture gives employment the whole year round to hundreds of thousands of individuals; but no other branch is subject to such fluctuations, and these are occasioned, in the first place, by the necessity for drawing the supply of the raw material from abroad. The rapid development of the cotton manufacture is shown in the clearest manner by the quantities imported at given periods. On an average of

the five years, 1843 to 1847 inclusive, they had increased to 403,100 cwt. In the year 1846, they had reached 447,300 cwt. The increase of this manufacture has been sevenfold in the last 18 years. In the year 1847, the Austrian monarchy contained 206 spinning mills, with 6,125 spinning machines, and 1,421,986 spindles.

The total production in the year 1849, of cotton yarn and twist, was 397,240 cwt. The number of work-people employed directly and indirectly in the spinning mills is about 50,000. In addition to their own production of cotton yarn they import considerable from abroad, mainly from England. Most of their weaving is done by hand looms. The number of hands employed in *cotton weaving* is not less than 300,000.

Switzerland ranks next to England, in comparison with the number of her population, in the production of woven and spun cotton; it is likewise one of the countries that consumes the most. She has in operation more than 950,000 spindles, and manufactures all the numbers up to 250 (English.) The Swiss possess about 250 dyeing establishments for thread and woven stuffs. The Turkey-red dyeing establishments are of great renown. The manufacture of printed cottons commenced in this country about the middle of the 18th century. Her first spinning establishment by machinery was erected about the beginning of the present century. During their early stages her manufacturers had every thing to contend against in the shape of French prohibition and *English competition*; but her energy and industry have overcome every obstacle, and they are now firmly established.

Belgium, in 1844, was running about 420,000 spindles.

Cotton spinning was introduced into Saxony in the 16th century. The first articles made were cotton scarfs or veils, of about two yards' length, and were purchased by Greek merchants to be sold to the Turks for turbans. In 1650, an article called "cotton crape" was the first result of the improvements made in weaving. At that time the weaving was done by men and women at their own houses. In 1774, owing to the importations of English yarns underselling the domestic spinner, corporations were formed and attempts made to introduce English machinery. In 1800, the first spinning machine was built, by an Englishman named Whitfield. In 1813, all Saxony had but 85 spinning frames, and in 1845, she had 500,000 spindles, employing 12,000 hands.

Prussia, Baden, Wirtemberg, and other small German principalities, were using in 1846 about 100,000 bales of cotton, and running 1,000,000 spindles. Their imports of yarns from England are decreasing annually, and their exports of the same article are increasing.

Russia, in 1841, imported about 30,000 bales of cotton, of which about 2,500 were from the United States, 17,500 from England, and the remaining 10,000 bales from India, Persia, &c. During that year she made 32 million pounds of yarn. The cotton from India imported by Russia, is mostly spun by hand, being a very short staple. In addition to the above importation of cotton, she received from other countries 24 million pounds of yarn, nine-tenths of it from England. The portion brought from Central Asia is of inferior quality, and used only for coarse cloths. Russia at that time had 700,000 spindles, and is annually increasing her cotton manufacture.

EGYPT.—As soon as Mehemet Ali obtained sway in Egypt, his powerful mind sought for means to render him independent of foreign powers. He introduced workmen from abroad, and erected immediately the first cotton factory at Cairo on the Nile. At Malta (a place deriving its name from the Maltese operatives employed there), he also built a large factory to operate 200 looms. He experimented with different varieties of cotton, in order to ascertain the kind best adapted to the climate and soil of Egypt.

In connection with these experiments, M. Jumel, formerly a French merchant in the city of New-York, introduced cotton seed and gins from the United States, about 1820 and 1821, and succeeded fully in establishing them. In 1828, the Sea Island was planted, and produced an article of good quality, which is still cultivated, and known in commerce as "Egyptian Sea Island."

Turkey, under her present Sultan, is making commendable progress in various manufactures, and among them the manufacture of cotton is by no means neglected. At the World's Fair in London, there were exhibited no less than twenty-five varieties of cotton, the product of Turkey, and upwards of one hundred and fifty articles of cotton manufacture, including those combined with gold, silk and woollen, many of which were of great beauty and gorgeousness. Among the more common and useful articles were specimens of cotton duck for sails. But it is impossible at present, to get correct statistics of the manufactures of this empire.

This important manufacture is now on the increase in the other European States; but we have not been able to obtain sufficiently correct statistics to enable us to state the amount or the degree of perfection to which they have arrived.* The yarns of England are still exported to the continent, to the amount of many millions annually, which are there woven into cloth, principally by hand looms.

* Messrs. Du Fay & Co. of Manchester, have published the following interesting table, giving a comparative estimate of the quantities of raw cotton consumed in

CHINA AND THE EAST INDIES.—It is impossible to procure very reliable data or estimates of the production and consumption of these over-populated portions of the globe, but enough is known to render it certain that they are vastly greater than of all the balance of the world. Mr. John Chapman, founder and late manager of the Great Indian Peninsular Railway Company, in his work on the Cotton and Commerce of India, remarks that the estimates by various writers of the consumption of cotton in India, range from one thousand millions to three thousand millions of pounds. The average of these amounts is nearly double the greatest crop of cotton ever raised in the United States. CHINA produces annually more than 500,000 bales of the yellow or Nankin cotton, besides which she imports largely from India.

Art. IV.—THE GREAT LAKES—THEIR CITIES AND TRADE.

LAKE SUPERIOR, ITS GEOLOGICAL FEATURES, ITS ISLANDS, RIVERS, FISH, TOWNS, COPPER MINES AND MINING COMPANIES—IRON—ST. MARY'S CANAL—LAKE MICHIGAN, CHICAGO, MILWAUKIE—LAKE HURON, DETROIT—LAKE ERIE, SANDUSKY, CLEVELAND, BUFFALO—LAKE ONTARIO, &c., &c.

THE great lakes of North America, lying between the United States and the British possessions, form the most remarkable chain of fresh water lakes on the globe, whether we consider them as to their geographical position, extent, or commercial importance. Lying in the very heart of North America, they drain, and serve the commercial purposes of a larger portion of the civilized world, than any collection of inland water known. Each of them is a vast sea of itself, which, if unconnected even with the others, would in time become the busy scene of immense commerce, unlike any thing ever known around the waters of any inland sea of the old world. A single one of them even now presents a greater commerce than the whole Mediterranean. Some one has very aptly observed, that the trade of our great lakes—we mean the United States' trade—is the right term of American commerce. This is true; and it must be re-

the principal manufacturing countries, in millions of weight, from 1836 to 1851. (The figures for the United States are much too low.)

	1836.	1840.	1845.	1849.	1851.
Great Britain (millions of lbs.)	350	473	597	627	648
Russia, Germany, Holland, and Belgium	57	72	96	160	118
France (including adjacent countries)	118	157	158	186	149
Spain	—	—	—	—	34
Mediterranean	—	—	—	—	12
Countries bordering on the Adriatic	28	28	38	47	45
United States of North America	86	111	158	205	158
Sundries	—	—	—	—	11
Total (millions of lbs.)	630	841	1047	1225	1175

membered, that it has become such within the last thirty years. The trade of the great lakes has sprung up, like magical creations, at the single bidding of American industry and enterprise; and that, too, with little or no aid from the general government.* It is the spontaneous growth of American liberty and American institutions. In 1819 there was but one steamboat on the lakes. In 1841 the trade of the lakes had amounted to \$65,826,022, or more than four times the entire export and import trade of the 13 American Colonies in 1775. From 1836 to 1841 the increase of the trade of the lakes was \$50,000,000!

We propose, in the present paper, to unfold the present extent, condition, and prospects of the trade of the great lakes, taking each of them up separately, commencing with

LAKE SUPERIOR.—We shall trace down the swelling flood of commerce, eastward, to those points where it takes its final departure, by railroad and canal, for the tide waters of the Atlantic.

Lake Superior is the largest body of fresh water in the known world. It is about 360 miles long and 160 wide, measured in its widest part from Grand Island to Neepigon Bay. Its circumference is from 1,200 to 1,500 miles. Its mean depth is about 900 feet; its elevation above lakes Huron and Michigan 49 feet; and above the sea, 627. It covers an area of 32,000 square miles, according to some estimates; others make it more—about 50,000 square miles. It is about the size of the State of Pennsylvania.†

This vast inland sea is remarkable for the clearness and transparency of its waters; and it abounds with the most delicious fresh water fish known. The flavor of its trout, white fish, and others, exceeds infinitely that of the fish of the other lakes. Its sturgeon are quite remarkable; and all its fish command in market a higher price than others. "One species," says Mr. Andrews,‡ "the *siskawit*,§ has only to be known

* Of \$17,199,233 appropriated by the general government for the benefit of rivers and harbors, only \$2,790,999 were devoted to the lakes.—*Andrews' Report*, p. 53.

† For convenience of reference, and to save the trouble of stating the dimensions of the other lakes, we add here the following table, giving a comparative view of all the great lakes. We take it from Mr. Andrews' Report on the Lake Trade. His figures vary a little from ours in respect to Lake Superior. Dr. Charles T. Jackson, late United States Geologist, says: "Its greatest length is 400 miles." It will be seen by the above table, that the narrow of Lake Superior is 273 feet below the surface of the ocean. Dr. Jackson says 300 feet:—

Names.	Greatest Length. Miles.	Greatest Breadth. Miles.	Mean Depth. Feet.	Elevation. Feet.	Area. Sq. Miles.
Superior.....	355.....	160.....	900.....	627.....	32,000
Michigan.....	320.....	100.....	900.....	578.....	22,000
Huron.....	260.....	160.....	900.....	574.....	20,400
Erie.....	240.....	80.....	84.....	565.....	9,600
Ontario.....	180.....	35.....	500.....	232.....	6,300
Total.....	1,555.....	—.....	—.....	—.....	100,000

‡ *Percopsis guttatus*.

§ Report on Colonial and Lake Trade, 1852.

in the New-York and eastern markets, in order to supersede all varieties of sea-fish; for, unquestionably, none approach it in succulence and flavor." The trout generally weighs 12 lbs., but in some instances exceed 50 lbs.

The lake is subject to as violent storms as the Atlantic, rendering the navigation at times exceedingly dangerous.* The coast is generally elevated, rocky, and mountainous, but exceedingly picturesque and grand. In many parts, along the southern shore, the country is decidedly mountainous, the ridges rising, in many places, 800 feet above the lake. The land on the borders of the lake is generally sterile. From the elaborate report of Mr. D. D. Owen, United States Geologist, it appears that geological sections, along the southern shore of the lake, present four formations or great classes of rocks. 1st, *Sedimentary*, embracing red sand-stone, black slate, and conglomerate; 2d, *Trappous* rocks, or those of volcanic origin, embracing black and red amygdaloid and greenstone trap; with augitic, hornblendic, and feldspathic rocks, embracing syenite and granites of the same age; 3d, *Metamorphosed* rocks, of hornblendic slates, iron slates, black slates, in large, thin, rectangular sheets; talcose slates, with quartz, and slaty quartz; 4th, *Granitic* rocks, of syenite and granite, occupying the country south of the mountain range.

Since these four systems of rocky beds and masses underwent their last disturbance, the superficial materials have been deposited, reaching from the lake level up to the highest summits, 1,282 feet above the lake. These deposits consist of red clay, boulder drift, coarse sand, and gravel. They are supposed to be, in origin, contemporaneous. This red marly clay, so called, is rather a fine-grained homogeneous marly sand, cemented by clay, and exhibiting well-defined horizontal lines of lamination. It constitutes the shore, or lake bluffs, in many places, especially towards the southwest. It is constantly being washed away by the waves of the lake, into which it falls in immense slides and avalanches, and is cut into deep narrow gullies by the rains. It slopes gradually back from the lake to the mountains, and appears like the bed of an ancient sea. It rises, in some places, to the height of 500 feet. The bold and curiously wrought face of the clay bluffs on the coast form

* "Lake Superior has at times not only the varied interest, but the sublimity of a true ocean. Its blue, cold, transparent waters, undisturbed by tides, lie, during a calm, motionless and glossy as those of any small secluded lake, reflecting with perfect truth of form and color the inverted landscape that slopes down to its smooth, sandy beach. But when this inland sea is stirred by the rising tempest, the long sweep of its waves, and the curling white caps that crest its surface, give warning not only to the light bark canoe, but also to sloop, and schooner, and lake steamer, to seek some sheltered haven."—Owens' *Geological Survey*, p. 34.

scenes that attract the attention of the traveller, and are worthy of the notice of the scientific painter.*

Terraces above the red clay, in many parts, are very well defined, formed of boulder drift. The material of the drift is almost entirely washed boulders of the trappoic, quartzoic, granitic, and metamorphic rocks of Lake Superior, very large, and with little gravel and earth between them. These terraces are so well marked as to be easily counted at the distance of ten miles in clear weather. The impression is very strong on the mind of the beholder that they are ancient beaches or shores†—that what is now Lake Superior, is only what has been left of the ocean which may have once extended thus far into the continent.

The northwest shores of the lake present high ranges and chains of hills, which begin in Canada and cross into Minnesota. They rise from 1,200 to 1,300 feet above the lake. The valleys between the mountain ridges are from 500 to 600 feet below the summits, and vary in width from one to two miles, to narrow gorges not over 200 or 300 yards across. The scenery of the whole extent of the ranges north of the lake is bold and picturesque. The outline of the chains of ridges is very irregular. Some of the hills are round-backed, others angular, and others jagged, with an occasional peak here and there, but no spires. In the trap region rugged mountain scenery prevails.

The rivers have numerous falls and cascades, and in the small deep valleys often expand into beautiful lakes. There is great confusion in the geological formations on the north shore. The great amount of denudation or erosion on the north shore, also adds much to the complexity of its geology. The stratified rocks, however, are well defined in some localities. The tops of the high ridges are sometimes quite bare, but generally they are covered with mosses and lichens, and a stunted growth of evergreens. The rocks are sometimes found for several acres in extent, perfectly naked, smooth and polished.

Almost the whole line of the shore is rock-bound, the rocks rising from the water in escarpments, many of them mural, from 10' to 200 feet in height, and presenting an almost unequalled section of igneous and altered rocks. At no points are sloping wooded plains to be seen, as on the south shore.

The shore is indented by numerous small bays and pockets, but none of them very deep. At the bottom of these bays the beach is low, and covered with boulders. The beaches can only be approached by canoes or the smallest craft. Some of the bays, however, afford shelter from storms, and they are often bounded by high mural walls of rock, rising 600 feet above the

* Owens' Geological Survey of Wisconsin, Iowa, and Minnesota, pp. 425-7.

† Colonel Whittlesey's Report, in Owen.

water. These bays owe their existence, shape, and extent, to the numerous trap dykes, with various bearings, which traverse all this region.*

The entire shores of the lake have not yet undergone a thorough geological survey, that of Dr. Owen embracing only a portion of the south shore, the southwestern part, and a portion of the north shore. The eastern part of the lake presents many very interesting geological features. The pictured rocks on the shore toward the east end are a great curiosity. They form a perpendicular wall 300 feet high, extending about 12 miles. They present numerous projections and indentations, with vast caverns, which receive the waves with a tremendous roar. At one place a considerable stream is thrown from them into the lake, by a grand cascade 70 feet high, and is projected so far, that boats pass dry between it and the rocky shore. The Doric rock or arch appears like a work of art, consisting of an isolated mass of sandstone, with four pillars, supporting a stratum or entablature of stone covered with soil, and giving support to a handsome growth of spruce and fir trees, some of which are 50 or 60 feet high.

The entire geology of the region of Lake Superior sufficiently indicates the forbidding character of that portion of the world. With the exception, perhaps, of some limited sections on the south and southwest shore, the entire borders of the lake are miserably sterile and uninviting. Their mineral wealth is all that renders them valuable. For a minute description of the geology of Lake Superior, we must refer our readers to the great work of Mr. David Dale Owen, United States geologist, published by the government.

Lake Superior receives the waters of some eighty small rivers, none of which are navigable, except by canoes, owing to their numerous falls and rapids. The chief of these rivers on the American side are the Montreal, Black, Presque Isle, Ontonagon, Eagle, Little Montreal, Sturgeon, Huron, Dead, Carp, Chocolate, La Prairie, Two-hearted, Tequamenen, and St. Louis. The Ontonagon and Sturgeon are the largest and most important rivers, which, by the removal of some obstructions at their mouths, and the construction of piers to prevent the formation of bars, might be converted into excellent and spacious harbors, in the immediate vicinity of some of the most valuable mines, where the want of safe anchorage is now severely felt.

Lake Superior contains several large islands, of which the largest is Isle Royale, in the western part, opposite the commencement of the grand portage. The 48th parallel of North latitude runs exactly through the middle of it, and nearly

* Owens' Geological Survey, &c., pp. 341-418.

through the middle of the lake itself. The best harbors of the lake are those of this island, but they are rarely visited. They are small and beautiful, and scattered along its whole extent on both sides of the island. At its easterly extremity the long spits of rocks which project like fingers far into the lake, afford abundant shelter for boats or small vessels; while at the western end of the island, there is a large and well sheltered bay called Washington harbor. Near Kiskanit bay are shelving strata of red sandstone, running for many miles out into the lake, with only a few feet of water covering them, thus rendering the entries to the bay dangerous. On the south side of the island is Rock Harbor, a bay large and perfectly safe for any vessel. Its shores are very bold, while its anchorage is good; and the numerous little islands, which stand like so many castles at its entrance, protect it from the heavy surges of the lake. The whole aspect of this bay is not unlike that of the bay of Naples, though there is no modern volcano in the back-ground to complete the scene. The distance of the island from the main land is about twenty miles.*

Between Isle Royale and the main land are two considerable islands, of which, however, little is known, and in the extreme north part of the lake are four more. In the southwest corner of the lake lie the Apostle's Isles, a cluster of considerable importance. When the waters of the lake assumed their present level, these islands were, doubtless, a part of the promontory now existing between Chegwomingo bay and the Brule river. They are composed of drift hills and red clay, resting on sandstone, which occasionally appears at the surface. In the lapse of ages the winds and waves broke up the extremity of the promontory, leaving the fragments in the shape of these islands. Madeline is the largest of the group, being thirteen miles long, and with an average breadth of three miles. Bear Island and Eshquagendeg are the next two largest, and are each about four miles long, by two and a-half wide. The whole cluster embraces an area of about 400 square miles, of which one-half is water. The soil of the islands is in some places good, but the major part of it would be difficult to cultivate. Thickets of evergreens line the shores, while the rest of the surface of the islands is covered with cedar, birch, aspen, hemlock, and pine, with occasionally patches of sugar-tree land and natural meadows. The shores are bold, wild, and dangerous, the rock being often worn into grottoes, detached pillars, blocks, caverns, arches and niches, through which the waves resound. The waters around the island teem with the finest fish.

* Dr. Chs. T. Jackson's *Geology, Mineralogy, and Topography of Lake Superior*.

Where the soil of the islands can be tilled, it yields potatoes and other garden vegetables. In the low grounds the grass is fine; oats do well, and wheat, it is thought, would thrive. Currants and raspberries are the only fruits seen there. The health of the islands is not surpassed. A proposition either has been, or will be submitted to the government at Washington, for colonizing these islands with those Indians who ceded their territory to the United States, in 1842, and who are soon to be removed.

The other islands of Lake Superior are Grand Island on the Michigan shore, another near the outlet, of the same size, two others north of the outlet, and lastly, the isle of Michipicoten, which is next in size to Isle Royale, though only one-third its size. Little is known of it, but it is believed, like Isle Royale, to abound in copper.*

The lands immediately adjoining Lake Superior are, for the most part sterile, barren, and rugged beyond description, consisting for the most part, on the southern shore, of detrital, and on the northern, of igneous rocks, covered with a sparse and stunted growth of pines and other evergreens, mixed with the feeble northern vegetation of birch, aspen, and other deciduous trees of those regions. Little of the shores are susceptible of cultivation, and it is not likely that the soil will be able to sustain a very dense population. The more southern regions will have to furnish them food.† The country may be said to be, for a considerable distance around the lake, almost entirely destitute of agricultural resources; but this deficiency is replaced by its vast mineral wealth, which will ensure it a dense population. Its numerous rivers, too, although not navigable, possess perhaps a more important quality—they afford an unlimited amount of water-power for manufactories. This superabundance of water-power, on the shores of the largest lake in the world, is the most extensive of any known, and is destined to render it one of the greatest manufacturing regions in America.

The vast mineral wealth of the shores of Lake Superior probably greatly exceeds all popular opinion on the subject. From

* In a late number of the *Daily Wisconsin* newspaper, we find the following:—Hon. Jonas C. Heartt, ex-mayor of Troy, New-York, recently passed through this city on his way to the South and East from Lake Superior. He expressed himself much pleased with the localities which he visited, and corroborated all that has been published with reference to the vast mineral wealth of that region. He visited Michipicoten island, which has been touched but once before by a steamer, and that one was obliged to take shelter there in a gale of wind. There is a silver mine on the side of the island towards the Canada shore. He also saw at the "Cliff" copper mines a single mass of copper ore weighing *three hundred tons*. It would cost \$3,000 to cut this up in a shape for transportation. The value of this mass, at 28 cents per lb., would be \$188,160. There was also in another locality a mass weighing *one hundred and fifty tons*.

†Andrews' Report, p. 231.

the east to the west the whole southern shore abounds with copper—not as it is generally found, in ore yielding a few per cent., but in vast veins of almost virgin metal, the extent of which is yet unexplored, as it is probably unexpected and incalculable. When this region was first discovered by the Jesuits, early in the 17th century, these mines were worked by the Indians, and had probably been known to them for ages. They concealed them from the whites with a superstitious mystery; and when iron was at last introduced among them, the mines fell into oblivion, and it is only very recently that they have been re-discovered. Many more are doubtless yet to be discovered, as the whole region is evidently one vast bed of mineral treasure. The isles Royale and Michipicotan are also, beyond question, full of copper, as are also portions of the British coast, where two or three mines have already been opened.*

As it is desirable to give our readers as full an account as possible of the vast mineral wealth of Lake Superior, we shall lay before them the statements of Dr. Charles T. Jackson, late U. S. Geologist and Chemist, as given in his report to the government, on the geology, mineralogy, and topography of the lands around Lake Superior, a report which must be received as high authority.

At Eagle river is "a vein of native copper, mixed with silver, which is one of the wonders of the world, there being solid masses of pure copper in it of more than 100 tons weight each, besides masses of smaller size in other parts of the vein."† This mine has produced about 900 tons of copper per annum. It is a regular metallic vein in amygdaloid trap rock. The vein is exposed in the face of a cliff, 300 feet above the level of the southwest branch of the Eagle river. The miners are now working this mine 300 feet below the surface. Immense blocks of copper are now taken out, and large lumps of copper called barrel ore, and rock rich in smaller pieces of copper, mixed with silver, are now raised, this last being called stamp ore, and worked by stamping and washing the ore. From this stamp work about \$5,000 worth of pure silver is picked out by hand, and much is still left among the finer particles of metal, and goes into the melted copper. Suitable expelling will ultimately be erected for the separation of all the silver from this rich, argentiferous stamp work, lead being the appropriate metal for its extraction by eliquation and expellation.‡

There are other valuable copper mines on Eagle river. The North American Company, which has one end of the cliff vein, called the South Cliff mine, and another on which their mining operations commenced some years ago, is at present in success-

* Andrew's Report.

† Dr. Jackson's Report.

‡ Ibid.

ful operation, and will add much to the exports of copper from the lake.

The Lake Superior Copper Company, the first that commenced mining in the copper region, in 1844, after laboring unsuccessfully for about two or three years, unfortunately sold out their mines just at the moment when they were upon the vein that has now been proved to be so very rich in copper and silver. The Phoenix Company, who bought the mine, have thus far been amply rewarded. To the eastward of this mine is another, which promises immense returns. The Copper Falls mine is also very rich in both copper and silver. The Northwest Company has a valuable mine a few miles from Eagle Harbor, and the metal raised therefrom is very rich and abundant. There are also several other mines at Eagle Harbor.

Native copper is also observed on Isle Royale. The most important mines are on the north side of the island. On Phelps' Island also is found native copper. On the Ontonagon river are important mines.

The rocks known to belong to the auriferous formation of Lake Superior, says Dr. Jackson, are all of igneous formation, or have been thrown up from the unknown interior of the globe in a molten state, and in long rents, having a somewhat crescentic shape, with the curve towards the north and west. The average width of this belt is not more than 5 miles, while its length is not less than 200.

It is remarkable that the copper on the northern shore of the lake is generally associated with sulphur, as yellow copper pyrites, or as grey or black sulphurets of copper; while the copper on the south shore, and on Isle Royale, is mostly in the metallic state and associated with silver, also in the metallic state, and that, too, without any alloy of one with the other. This singular condition of the two metals has greatly puzzled the chemists and mineralogists, and the solution of the problem is still undiscovered.*

Besides copper, there are mines of iron on the shores of the lake, which afford immense quantities of ore, and add greatly to the wealth of the region.†

* Jackson's Report.

† There were in 1850 no less than 23 Lake Superior mining companies, all in operation, employing a capital of \$618,760,—789 men, and digging 1,525 tons of native copper annually, worth \$396,960. There were also two iron mining companies, with a capital of \$29,000, and furnishing a product worth \$37,000. Our latest information from the mines of Lake Superior is down to February, 1853, at which time all of them were in a most flourishing condition. The great Cliff mine continues to yield masses of nearly pure copper, of from one to eighty tons each. The net profit of the mine is \$18,000 per month. In the Hill mine are two masses of pure copper at present, each exposed more than 20 feet in depth, and from 6 to 30 inches thick. The length of these masses is unknown. It would occupy too much space to particularize the enormous masses of virgin copper to be seen in

Nor must we pass over, in enumerating the resources of Lake Superior, its valuable fisheries. The fish trade of the lake is already considerable, and when the connection with the other lakes is completed, it will be, undoubtedly, very extensive.

The business of Lake Superior for 1851, estimated from the articles which crossed the portage at the Sault St. Marie, was as follows :

Imports—100,000 barrels bulk; in which are included 2,000 bundles of pressed hay, 20,000 bushels of oats and other kinds of grain, provisions, dry-goods, groceries, general supplies, and five mining engines—forming an aggregate estimated value of \$1,000,000.

The *exports* passing down from the lake, around the rapids, for the same season, were as follows :

1,800 tons of copper, at \$350	\$630,000
500 " iron, at \$50	25,000
4,000 bbls. of fish, at \$5	20,000
	<hr/>
	\$675,000

The imports of 1851 exceed those of 1850 by 40,000 bbls.*

If the obstructions at the Sault St. Marie were removed, the Lake Superior trade would increase one hundred fold in five years. After some twenty years' debate on the subject of a ship canal around the falls, the government have at last commenced the work. The digging of such a canal is now actually going on, and its completion will form a new era in the history of Lake Superior. It is calculated that the tolls of the canal will pay the entire cost of construction in six years. The distance to be overcome does not exceed one mile, with an ascent perpendicular of 22 feet. The falls called the Sault St. Marie, on the St. Mary's river, the outlet of the lake, are about 120 miles from Mackinaw, 405 from Detroit, and 921 from Washington city. The rapids are about three-fourths of a mile long, and are about 20 miles below Lake Superior, with a fall of about 21 feet. The river St. Mary's is in all, from Lake Superior to Huron, about 60 miles in length, flowing first a few degrees north of east, then bending abruptly, and flowing a few degrees east of south. The banks of the river nowhere rise more than 20 feet above the water line, and are composed of soft, friable rock, imbedded in easy soil. It is truly astonishing that our government should have suffered so trivial a piece of internal improvement, but one of such immense importance, to remain so long untouched. The work, however, is now begun. The cost is estimated at only a most of the mines. Some eight or ten other mines have recently been opened on Lake Superior, mostly by New-York capital. They are all very promising.

* Andrews' Report on Lake Trade, 1852.

few hundred thousand dollars. When the work is finished, the largest and richest lake in the world will be thrown open to trade. The effect of the removal of this untoward obstacle, which deters a large, useful and healthy population from settling in that region, which keeps the mineral lands of the United States out of the market, and in a very great measure debar the influx of minerals which could not be otherwise shut out,—would be to give a general stimulus to trade, and an infusion of vigor, activity and spirit to the whole movement of the country, with a general increase to the national wealth, entirely beyond the reach of calculation.*

As yet there are but few settlements or towns on the lake. At the mouth of the Ontonagon is a town of some growing business. La Pointe, at the Apostles' Islands, is a pretty village, with a good harbour. It is situated on a magnificent bay, nearly three miles wide, which is capable of containing at anchor, secure from all winds, a numerous fleet of the largest class of vessels. La Pointe is destined to become a large place. It was originally selected by the adventurous traders of the Northwest Fur Company, as the most eligible site for a *dépôt* and trading post in the Northwest Territory, and was for a long time their principal rendezvous, and the centre of their extensive and widespread operations. It is not only one of the most commanding and accessible situations on Lake Superior, but it presents one of the most agreeable and picturesque lake scenes that can well be imagined. The eye of the tourist will rest upon it with delight, and feast his eyes long upon its exquisite beauty. We dwell upon this place, because it is likely to become, as soon as the St. Mary's Canal is opened, a place where speculation in town lots will run high, if indeed it has not already begun.

As a site for a town, and especially as a place of resort for health and pleasure, La Pointe offers advantages beyond any portion of the main land in Wisconsin. Its surface is sufficiently level and extensive for all purposes of agriculture; its soil, a retentive red marl, is capable, under a proper system of tillage, of returning to the husbandman a hundred fold, and of producing fruits and vegetables in perfection. Its gently sloping, sandy beach, insures a secure footing to the bather. As a fishing station it is unrivalled.† Mr. Owen, in his great work, gives a fine view of La Pointe, as seen from a promontory on Madeline Island.

Fond-du-Lac, on the St. Louis river, is also destined to become a considerable place. It is 18 miles from the mouth of the river, which is wide and navigable thus far for the craft which ply on Lake Superior. It is well situated on a rich alluvial bottom,

* Andrews' Report.

† Owens' Geological Survey, pp. 33, 34.

having a site sufficient for a large city. From Fond-du-Lac across to the Mississippi it is only 35 miles. A canal or railroad will before long connect the two. The navigability of the St. Louis river is not a question. In 1850, the propeller Manhattan, Captain Caldwell, entered the river without difficulty, and proceeded as far up as Fond-du-Lac. The river at the time was not above its ordinary stage, and at the lowest part sounded there was over six feet in the channel.*

Eagle and Copper Harbors are also places of commerce, for the importation of supplies and the shipment of mineral produce. Ance, at the head of Keweenaw Bay, Marquette, Isle Royale, where there is a good harbor, are all places rapidly growing into importance. It would seem that the whole lake coast, from the outlet round to Isle Royale, is one continued chain of iron and copper mines, the immense wealth of which, when fully developed, can scarcely be conceived.†

There are at present on the lake two steamers, four propellers, and a considerable number of small sailing craft, all of which have been dragged over the portage, at the outlet of the lake, by man and horse, as everything has been dragged for years; and yet, under all these disadvantages, the trade of the lake has been on the increase.

LAKE MICHIGAN.—This is the second in size to Lake Superior; and as to situation, and the soil and climate of the surrounding country, is preferable, in many respects at least, to any other of the great lakes. Its southern extremity extends southward into one of the most fertile and productive agricultural regions on the globe. It lies between $41^{\circ} 58'$ and $46^{\circ} N.$, and $84^{\circ} 40'$ and $87^{\circ} 8' W.$ long. On its western shore is the great indentation of Green Bay, itself as large as the largest lake in Europe, its area being about 3,000 square miles, or nearly half as large as Lake Ontario. It is well sheltered at its mouth by the Traverse islands, and has for its principal affluents the outlet of Lake Winnebago and the Fox river. The other principal streams emptying into Lake Michigan are the Menominee, Escanoba, Noquet, White Fish, and Manistee rivers, from the north part of the Michigan peninsula; the Manistee, Maskegon, Grand, Kalamazoo, and St. Joseph rivers, from the south part of the peninsula; and the Des Plaines, O'Plaines, and Chicago rivers, from Illinois and Indiana. No lake in the world is surrounded by so rich an agricultural region as Lake Michigan. On its western shore is Wisconsin, with its productive grain and grazing lands, and its immensely valuable lumber region; on the northwest and north is that vast region of mineral wealth, which we have already described; on its eastern border is the

* Dr. Owens' Geological Survey, p. 270.

† Andrews' Report, p. 210.

Michigan peninsula, yielding such vast supplies of cereals, especially wheat and maize; and on the south and southwest lie Indiana and Illinois, whose inexhaustible stores of agricultural products amaze the world.*

In investigating the nature and extent of the trade of lake Michigan, we shall commence on its western shore, at the extreme north, at the port of Manitowoc, a place almost unknown four years ago, but which now has, including the immediate surrounding country, a population of 5,000 inhabitants, and a trade already greater than was that of Chicago in 1839, as regards exports, although the imports are something inferior. The *exports* at present consist of lumber, laths, pickets, ashes, shingles, furs, wood, whitefish, &c., &c., to the value of \$77,122 annually, the amount constantly increasing. Its *imports* consist of merchandise, as salt, beef, pork, butter, lard, meal, flour, dry goods, &c., to the amount of about \$107,000; thus making its entire trade about \$184,122 annually. The number of vessels that entered its port in 1851, was 788, and the tonnage 227,940 tons.

A few miles north of Manitowoc is the port of Two Rivers, which is likely to become a considerable place of business. It is advancing rapidly. In 1847 its imports were only \$53,747. In 1851 they were \$115,000. The exports of 1851 were \$112,763. Its entire trade, therefore, amounted, in 1851, to \$227,763. In the same year there entered its ports 822 steam vessels, and 192 sail, or 1,014 arrivals in that year. The character of its exports and imports is the same as those of Manitowoc.

The next port, going south, is that of Green Bay, situated at the head of the bay of that name, and at the mouth of Fox river. This port bids fair to rival Chicago itself as the lake depôt for all the lake trade which has its origin on the borders of the Upper Mississippi.† The work known as the Fox river improvement is now nearly, if not quite, completed. It connects the Mississippi with Lake Michigan by steam navigation. This work has made Fox river navigable for small steamers up into Lake Winnebago, of which it is the outlet. From Lake Winnebago, the canal passes to the Wisconsin river, which flows into the Mississippi. This is the first connection that has been undertaken of the Mississippi with the great lakes, for steam power. Fort Crawford, at the junction of the Wisconsin with the Mississippi, is 487 miles above St. Louis. When this canal is completed, one will be able to go, by water, from New-York to New-Orleans, by way of the great lakes.

The distance from Green Bay to the mouth of the Wisconsin is about 220 miles. The advantages of this connection with the

* Andrews' Report, pp. 229, 230.

† Ibid. 204.

Mississippi, to Wisconsin, Iowa, and Minnesota, are immense and incalculable. Besides its facilities to emigrants, it will turn a vast amount of the trade of the Upper Mississippi towards the lakes.

Green Bay, which for several years has been a great dépôt for fish and lumber, is now rapidly becoming the great commercial centre of Wisconsin. Between it and Buffalo there has been regularly plying a line of steamers, since 1851, which shows the present and growing importance of the place. It is making rapid strides in its progress. Within the last two years its trade has advanced beyond all previous calculation. Its total trade is now estimated by Mr. Andrews at \$3,000,000—exports \$2,000,000, and imports \$1,000,000.

Following the lake shore we next arrive at Milwaukee, a port of entry, in lat. $43^{\circ} 3'$ north, and long. $87^{\circ} 57'$ west. The population of this place, in 1840, was only 1,712 inhabitants. It is now, or was, in 1850, by the census, 20,061. It is situated on the Milwaukee river, which forms a good harbor for vessels and steamers of light draft, but it needs some improvement to make it easy of access to larger crafts. The harbor is well sheltered against all but easterly winds. The city stands partly on the river and partly on the bluffs, which are very high, and overlooks for a great distance. It is ninety miles north of Chicago, and is the chief city of Wisconsin. It is the second city in size on Lake Michigan, Chicago being the first. It is 805 miles from Washington city. It is the market of the greater part of the products of Wisconsin. Steamboats and other vessels navigating the lake touch there on their way to and from Detroit and points on Lake Erie, and the St. Lawrence, Erie and Welland canals. The surrounding country is rich, and rapidly increasing in an industrious and enterprising population, of which Milwaukee is the nucleus and centre of trade. The city is remarkable for the peculiarly bright straw color and excellent quality of its *bricks*, for which the rich clay beds along the lake afford abundant material. Besides the large quantities of these which are exported, they are used for the majority of the buildings, some of which, in large and uniform rows of dwellings or stores, present a beautiful and splendid effect. The population of the city, in 1840, was only 1,712 inhabitants; in 1850, it was 20,061; the rate of increase being 1,072 per cent., or greater than that of any other city during the same period. The present population is estimated at 25,000. A rail-road is in progress from Milwaukee to the Mississippi, which is completed to seven miles beyond Palmyra, forty-three miles west of Milwaukee. It is intended to strike the Mississippi at Dubuque, or Prairie du Chien. During the last few years Milwaukee has not

progressed so rapidly as formerly. Our commercial statistics for the city of Milwaukee for 1851, are as follow :

Imports	\$14,571,371
Exports	2,607,824
Total	<u>\$17,179,195</u>

The commercial district of Milwaukee comprises about 100 miles of the western shore of Lake Michigan. In this district are five ports, Milwaukee, Sheboygan, Port Washington, Kenosha, and Racine. These are all flourishing places, and the total trade (exports and imports) of each for 1851, was as follows, exclusive of Milwaukee:

Sheboygan,	\$1,426,666
Port Washington,	1,043,850
Kenosha,	1,968,084
Racine,	2,507,715
Total,	<u>\$6,946,315</u>

Racine, the largest of the four places, has a population of about 5,500. The site of the city is said to be the most beautiful west of Cleveland. The harbors of the four places are not safe at all times. The entire trade of the district for 1851, including Milwaukee, was as follows:

Imports,	\$19,560,713
Exports,	4,564,779
Total,	<u>\$24,125,510</u>

The total number of vessels entering the district was 5,000.

The *exports* of the district consist of wheat, flour, pork, beef, oats, barley, corn, wool, hides, lard, ashes, lead, lumber, laths, shingles, fish. The *imports* consist of assorted merchandise, salt, and the household property of emigrants. The district has no trade with Canada.

The district of Chicago embraces 80 miles of lake coast, proceeding eastward, and includes, besides Chicago, the ports of Michigan city and Waukegan. Michigan city is about 40 miles east of Chicago, and is the only lake port of Indiana. The Michigan Central Railway passes through this place. Its trade is small, being estimated at about \$600,000. Its exports are wheat principally, wheat flour, corn, and oats.

Waukegan is on the west coast of the lake, 40 miles north of Chicago, and is a thriving place, but its harbor is not entirely safe. Its arrivals from sea during 1851, were 698 steamers, 244 propellers, 14 brigs, 105 schooners, 2 barks, and 3 sloops. Its trade in 1851 was as follows:

Imports,	\$619,834
Exports,	194,818
Total,	<u>\$814,652</u>

The city of Chicago is situated at the mouth of Chicago river, and is the commercial emporium of Lake Michigan and of the adjacent States. It is remarkable for its rapid increase in population, wealth and enterprise. It occupies both sides of the river, and is built on the border of a prairie elevated a little above the level of the lake. Few towns have a more advantageous position. The river, formed by the confluence of two branches in the upper part of the city, is deep and spacious enough for a vast number of steamboats and vessels of various kinds, which here assemble from different points on the lakes, the St. Lawrence, Erie, and Welland canals, and thickly line the wharves for some distance up the stream. The shore of the lake, naturally shallow, has been extended into deep water by means of two piers, which, projecting from both sides of the harbor, protect it from the accumulation of sand.

The streets of Chicago are generally broad and pleasant, lined with trees, and leading to the open prairie, or affording fine views of the lake. The buildings have the appearance of unusual comfort and convenience, while many of the public edifices are surpassed by those of few cities in the Union. Large warehouses and stores, five or six stories high, splendid hotels, churches, fine public schools and dwellings, frequently magnificent, are some of the structures which strike the eye and excite admiration.

Twenty years ago the lands of the adjacent prairie were the property of the Pottawatamie Indians. In 1833 the tribe removed by treaty to lands in Missouri, and the city began to rise, like magic, the moment their feet ceased to tread the soil. The progress of Chicago continues to be rapid.

The internal improvements, connecting Chicago with other places, are extensive and increasing. The Illinois and Michigan Canal, by connecting the lake with the Illinois river, has caused the current of trade which formerly flowed toward the Mississippi, to turn toward the "Garden City," as Chicago is called, making it the market of the rich products of Illinois, and of a vast trade in goods from the East. The lumber, grain, and cattle trade are those branches of commerce in which Chicago is most extensively engaged, and in which it surpasses all other western cities. The canal, which has contributed so largely to the growth of Chicago, extends from Chicago to Peru, the head of steam navigation on the Illinois. It is 106 miles long, 60 wide, and 6 feet deep. The descent between the two extremities is 20 feet. It was begun in 1836, and finished in 1849.

The rail-road connections of Chicago are very extensive. The Galena and Chicago Union rail-roads will, when finished, connect Chicago with Galena, the great *lead* depôt of the Northwest. The Southern and Central Michigan roads connect it with the Eastern States; while the great Central Road, which is rapidly

progressing, and will probably be completed this year, will connect Chicago with Cairo, at the junction of the Ohio with the Mississippi. The extent of rail-roads in progress and in operation, connected with Chicago, is truly astonishing. The following statement, taken from the *Chicago Democrat*, shows the number of trunk and radiating lines, all of which are based upon that city:—

TRUNK ROADS.

Michigan Central.....	280 miles.	Mississippi and Chicago....	280 miles.
Michigan Southern	243 "	Lake Shore.....	92 "
Chicago and Galena, to Free-		Ill. Central, (Chicago to Cai-	
port.....	125 "	ro.).....	353 "
Chicago and Rock Island.....	180 "	New Albany and Salem	285 "
Chicago and Aurora.....	86 "		
Illinois and Wisconsin.....	175 "		2,279
Chicago and Fort Wayne.....	180 "		

BRANCH ROADS.

Beloit Branch of Galena		County to junction with	
road	21 miles.	Aurora road	195 miles.
Beloit and Madison, (Ex-		Northern Cross and Central	
tension,).....	53 "	Military Tract, from Quin-	
Dubuque and Galena, to		cy, to connection with Au-	
Janesville.....	86 "	rore road.....	180 "
Dubuque and Galena, to		St. Charles Branch of Ga-	
Freeport	67 "	lena road.....	7 "
Savannah & Freeport Branch	35 "	Fox River Valley	40 "
Galena Branch of Ill. Central,		Mineral Point Branch road,	32 "
from Freeport to		Janesville to Madison	34 "
junction with Aurora road	60 "		
Fulton city to Dixon, branch	39 "	Total miles of Branch	
Ill. Central, from Clinton		Roads.....	849

These roads are all either completed or in rapid progress, and in about three years there will be completed at least three thousand miles of rail-road, all based on Chicago. The Chicago and Cairo Road will be completed this year; and then, in connection with the Mobile and Ohio Road, it will be possible to travel from Chicago to Mobile in forty-eight hours!

Chicago owes its rapid growth to its advantageous situation, and to the enlightened enterprise of its citizens. In 1840, it had less than five thousand inhabitants; in 1850, it had twenty-eight thousand and upwards; having gained, in one year, 1849, five thousand two hundred. The lowest estimate of its population for January 1, 1852, was thirty-five thousand; but more generally it is rated at nearly forty thousand. No parallel for so great an increase exists.*

The trade of Chicago with Canada, for 1851, is as follows:—

Exports of domestic products and manufactures.....	\$116,185
Imports.....	5,811
Total.....	\$121,996

* Andrews' Report.

The value of the principal articles of export and import, coastwise, for Chicago, for 1851, is as follows:—

Exports.....	\$5,395,471
Imports.....	24,410,400

Total trade with Chicago, for 1851.....\$29,805,871

The total trade of Lake Michigan, then, may be summed up as follows, for 1851:—

Green Bay	\$3,000,000	Michigan City.....	600,000
Milwaukie	17,179,195	Chicago.....	29,805,871
Sheboygan	1,426,666		
Port Washington.....	1,043,850		\$58,346,033
Kenosha.....	1,968,084	Canada Trade.....	121,996
Racine.....	2,507,715		
Waukegan.....	814,652	Total.....	\$58,468,029

LAKE HURON.—Mackinaw, situated on the island of the same name, 340 miles from Chicago, and 700 from Buffalo, is a place of considerable traffic. The principal exports are fish and furs, and the imports blankets, clothing, fishermen's supplies, and trinkets for Indians. There are no returns for its coastwise commerce. Its Canadian imports, for 1851, amounted to \$3,967. The Detroit lake district is very extensive, embracing some fifteen ports, none of which, however, are of any importance, except Detroit and Monroe.

The city of Detroit is in lat. 42° 20' N., and long. 83° 2' W.; Its population in 1810 was 770; in 1820, 1,422; in 1830, 2,222; in 1840, 9,012; and in 1850, 21,057. The present population is estimated at about 27,000. It is 302 miles from Buffalo, 687 from New-York city, and 524 from Washington. It is a beautiful town, situated on the west bank of the Detroit river, 18 miles from Lake Erie, and 7 from Lake St. Clair. The city is handsomely laid out with broad streets; and there are several spacious public grounds. The city stands partly on an ascending slope from the river, and partly on a level plateau some 80 feet above it. It is a place of great importance, and rapidly increasing. The Detroit river is at this place about three-fourths of a mile wide, dotted with beautiful islands, and of depth sufficient for vessels of a large draught. The shores on both sides are in a state of garden-like cultivation; indeed the entire banks of the Detroit river, from Lake Erie to Huron, resemble a continuous village, with fine farms, pleasant villas, groves and gardens.* Detroit being not only the largest, but the oldest town in the State of Michigan, and enjoying all the advantages which arise from a central position, a magnificent river, and a harbor of unsurpassed capacity and security, has arrived at a stand of commercial eminence from which it can now never be dislodged.

* Andrews' Report.

It is connected with both the East and West by rail-roads and the lakes.

The commerce of Detroit, according to the latest returns, is as follows:—

Imports, coastwise,.....	\$15,416,377
Exports, "	3,961,430
Total,.....	\$19,377,807
Imports, foreign,.....	\$98,541
Exports, "	115,034
	\$213,575
Entire trade of Detroit,.....	\$19,591,482

The returns for the ports of Lake Huron are very imperfect. Exclusive of Detroit, the trade of the other ports of Lake Huron may be estimated at not less than \$10,000,000. The tonnage of Detroit for 1851, was 1,826,336 tons. The trade with Canada, of the Detroit district, in 1851, was as follows:—

Imports,.....	\$98,540
Exports,.....	115,032
	213,572
Tonnage,.....	59,027 tons.

The trade of Lake Huron may then be stated as follows:—

Detroit,.....	\$19,591,482
All other ports,.....	10,000,000
Canada trade,.....	213,572
Total,.....	\$29,805,054

LAKE ERIE.—We shall examine the trade of this lake, taking up the ports in the order in which they occur, beginning at Toledo, and proceeding eastward.

Toledo, a port of entry, has a population of about 5,000 inhabitants. It is advantageously situated for an extensive lake commerce, and has two canals, both connecting its port with the Ohio river, the Miami and Erie Canal connecting it with Cincinnati, and the Erie and Wabash traversing the entire Wabash valley, and terminating at Evansville. Toledo must become, ere long, the grand depôt for all the lake trade of the Miami and Wabash valleys. These valleys are not surpassed by any in the Union for their agricultural wealth.

Toledo is well situated on the west side of the Maumee river, near the head of Maumee Bay, 464 miles from Washington, and in lat. 41° 38' N., and lon. 83° 35' W. It is rapidly increasing. Its rail-road connections are extensive, connecting it with all the great points of the West and East. All these circumstances, with the fact that it has an excellent harbor, afford certain assurance of continued prosperity. It is destined to become a large city. Its trade, for 1851, is as follows:—

Imports, coastwise,.....	\$22,987,772
Exports, "	7,847,808
Total,.....	\$30,835,580

Maumee and Perrysburgh, both on the Maumee river, have the following trade:—

	Exports and imports.
Perrysburgh,.....	\$503,810
Maumee,.....	46,764
Total,.....	\$550,574

The Canada trade of Toledo, Maumee, and Perrysburgh, is as follows:—

Imports,.....	\$26,469
Exports,.....	66,304
Total,.....	\$92,773

Proceeding eastward, we arrive at the district of Sandusky, which includes the following ports: Vermilion, Huron, Milan, Sandusky, Venice, Fremont, Portage, Plaster Bed, and Port Clinton, embracing 50 miles of lake coast. The trade of Vermilion, at the mouth of the Vermilion river, for 1851, was as follows:—

Imports,.....	\$116,295
Exports,.....	196,712
Total,.....	\$313,007

Huron, at the mouth of Huron river, 10 miles east of Sandusky, has a tolerable harbor. A ship canal connects it with Milan, 8 miles above, on the Huron river. The trade of Huron, for 1851, was as follows:—

Exports,.....	\$581,675
Imports,.....	877,155
Total,.....	1,458,831

In 1847, the trade amounted to about \$3,000,000.

The trade of Milan, in 1851, amounted to \$1,126,901. It is probable, says Mr. Andrews, that in 1847 the trade of Milan was included in that of Huron, thus accounting for the \$3,000,000 above mentioned.

Sandusky is situated on the south shore of Sandusky Bay, about five miles from its mouth, and 60 miles west of Cleveland, and 414 from Washington. Its site is very beautiful, overlooking the whole bay, its entrance, a beautiful lake beyond, and its fine harbor dotted with sails and steamers. The bay is about 20 miles long and five broad, forming a shelter large enough to give anchorage to the whole lake marine. It has an average depth of 12 feet of water. The channel at the entrance has 11 feet. A rich and inexhaustible quarry of fine limestone forms the foundation on which the town stands, and furnishes mate-

rials for its buildings. It is connected by rail-roads with the East and West, and with Cincinnati and Columbus. It has about 8,000 inhabitants, and is rapidly increasing in prosperity. Its trade, in 1851, was as follows:—

Imports, coastwise.....	\$15,985,357
Exports, ".....	6,459,659
Canada imports.....	272,844
Canada exports.....	99,088
Total trade in 1851*.....	\$22,816,948
Its trade, in 1850, was.....	12,111,034
Increase in one year.....	\$10,705,948

In 1851, Sandusky shipped to Canadian ports, 2,661,407 bushels of wheat.

Fremont, formerly called Lower Sandusky, is on Sandusky river, about 30 miles from Sandusky. It is accessible to vessels of light draft. It has a gradually increasing trade. In 1851 it was as follows:

Exports.....	\$314,530
Imports.....	359,419
Total.....	\$673,949

Venice is a small place on Sandusky Bay, about 3 miles from Sandusky. It is noted for its flouring mills. In 1851, it exported flour, valued at \$121,698.

Plaster Portage Bed is on the opposite side of the bay to Venice, and is engaged chiefly in the plaster trade, of which it exported, in 1851, to the amount of \$18,507.

Port Clinton, the last place to mention in the Sandusky district, is situated on the lake, about 10 miles west of Sandusky. Its trade, in 1851, was as follows:

Exports.....	\$67,235
Imports.....	59,049
Total.....	\$126,284

The entire trade, then, of the Sandusky district, in 1851, was as follows:—

* Since writing the above, we have obtained, through the Cincinnati Price Current, the following for the trade of Sandusky, for 1852:

Imports.....	\$40,806,085
Exports.....	18,789,814
Total.....	\$59,685,899
Total imports of other ports in the district.....	4,176,321
Total exports ".....	1,237,267
Total trade of Sandusky district.....	\$65,099,487

This shows an enormous increase for one year.

The total arrivals and departures of vessels, in 1852, was 6,492; in 1851, only 3,998.

Vermilion,.....	\$313,007	Fremont,	673,949
Huron,.....	1,458,831	Portage Plaster Bed,.....	18,507
Milan,.....	1,126,901	Port Clinton,.....	126,284
Sandusky,.....	22,816,948		
Venice,.....	121,698	Total,	\$26,656,125

Next adjoining to Sandusky, eastward, is the district of Cleveland, the second in importance, and next to that of Buffalo. Unfortunately, we have no returns for this district, except those for the port of Cleveland. The other ports are very small places.

Cleveland is one of the most beautiful cities not only in the West, but in the whole United States. It is the emporium of northern Ohio. It is situated at the mouth of the Cuyahoga river. The shore of Lake Erie at Cleveland is a bold bluff, about eighty feet high, upon the level top of which is built the largest and best part of the city. The mouth of the Cuyahoga river constitutes the harbor, which is deep, spacious, and accessible. The entrance is marked by two piers of solid masonry, which project into the lake 1,200 feet. Vessels of the largest class enter the harbor and proceed some distance up the river. The great Ohio and Erie canal extends from the harbor of Cleveland to Portsmouth, on the Ohio, a distance of 307 miles, traversing the rich interior of the State. The Ohio and Pennsylvania canal connects the Ohio and Erie with Pittsburg and the East. Besides, Cleveland is connected with the East, West, and South, by those magnificent rail-roads that now form a network over the State.

The history of the rise of Cleveland is truly marvellous. In 1799, there was but a single family on the spot. In 1825, there were 500 souls there; in 1830, 1,000; in 1834, 3,400; in 1840, 6,071. At the present moment the population, including what is called Ohio city, is about 32,000.

As a place of business, Cleveland is of high importance, and is destined to become an immense city. Its delightful situation, on an elevated plain above the Cuyahoga, commanding a fine view of the lake and river, planted with groves of forest trees, and interspersed with fine squares, makes it a very desirable place for residences. Its harbor is one of the best on the lake. Two light-houses stand at its entrance.

The commerce of Cleveland, for 1851, was as follows:

Imports, coastwise.....	\$22,804,159
Exports,.....	12,026,497
Total coastwise.....	\$34,830,656
Foreign Imports.....	360,634
" Exports.....	284,937
Total commerce.....	\$35,476,327
Trade of Ashtabula.....	951,502
Total trade of the district.....	\$36,427,829

The actual trade must be much greater than this, as there are six other ports of considerable importance for which there are no returns. The entire trade of the district is probably not far from \$40,000,000.

The next line of lake coast is that called the Presque Isle district, embracing the entire Pennsylvania lake coast. The port of entry of this district is Erie, a beautiful town of 3,000 inhabitants, handsomely situated on Presque Isle bay, eighty miles from Buffalo. The port is tolerably good, but the trade is very limited, it being, in 1851, \$4,206,483. It is, however, destined to rise, and to become a place of great importance.

The remaining portion of the lake coast, from the line of Pennsylvania to the Falls of Niagara, 100 miles, is called the district of Buffalo, embracing the ports of Schlosser, Tonawanda, Black Rock, Buffalo, Cattaraugus Creek, Silver Creek, Dunkirk, Van Buren, and Barcelona. Of these ports, Buffalo, Black Rock, Dunkirk, and Tonawanda, are the only ones claiming notice for their trade.

Tonawanda is twelve miles north of Buffalo, on the canal. It is a place of rapidly increasing business. Its trade, in 1851, amounted to \$3,782,086, showing an increase of \$2,576,592 above what it was in 1850.

The trade of Black Rock, in 1851, was \$2,349,334. The principal trade of this port is with Canada, by means of a ferry.

Dunkirk is 45 miles west of Buffalo, and connected with it by a rail-road. It communicates with New-York city by means of the great Erie Rail-road, 464 miles long. Its harbor is good for vessels of light draft.

Until the opening of the Erie Rail-road, the commerce of Dunkirk was only nominal. Its trade, for 1851, was as follows:

Exports.....	\$4,000,000
Imports.....	5,394,780
Total.....	\$9,394,780

This shows, in a notable manner, the value of rail-roads to the commerce of a place.

The city of Buffalo, the port of entry for this district, is in latitude 42° 53' north, and long. 78° 55' west. Its population, in 1830, was only 8,668; in 1840, 18,213; and in 1850, 42,261. This shows an increase of 113 per cent. from 1830 to 1840, and 132 per cent. from 1840 to 1850. Its population now cannot be far from 50,000.

Buffalo is the great natural gateway between the East and West. All the great routes between Lake Erie and the tide waters of the Atlantic centre there. It is 288 miles from Albany, on a straight line, and 363 by canal, by rail-road 325. The

harbor of Buffalo is good, but too small. It is expected, however, that some improvements, now in progress, will give it a capacity that will meet all the requirements of its trade for several years to come. The trade of Buffalo, for 1851, was as follows:

Imports.....	\$31,889,951
Exports.....	44,201,720
Total.....	<u>\$76,091,671</u>

This shows an increase of more than \$9,000,000 over the trade of the port for 1850. Its trade with Canada, in 1851, was as follows:

Imports from Canada.....	\$507,517
Exports to ".....	613,948
Total,.....	<u>\$1,121,465</u>

This added to the other trade as given above, makes the total trade of Buffalo, \$77,113,136.

The tonnage of Buffalo harbor, in 1851, was 212,480 tons, including foreign arrivals.

The total value and quantity of property received from the West and shipped to the West, for the entire district of Buffalo, for the year ending January 1, 1852, was as follows:

	Tons.	Value.
Received from the west at Buffalo,		
Dunkirk and Tonawanda.....	901,811.....	\$37,979,614
Shipped westward from Buffalo,		
Dunkirk and Tonawanda.....	225,440.....	51,288,923
	<u>1,127,251</u>	<u>\$89,268,537</u>

We are now prepared to sum up the entire trade of Lake Erie, for 1851, as follows:

Toledo.....	\$30,835,580	Portage Plaster Bed,....	18,507
Perrysburg.....	503,810	Port Clinton.....	126,284
Maumee.....	46,764	Cleveland.....	40,000,000
Canada trade of the above		Ashtabula.....	951,502
places.....	92,773	Erie.....	4,206,483
Vermilion.....	313,007	Tonawanda.....	3,782,086
Huron.....	1,458,831	Black Rock.....	2,349,334
Milan.....	1,126,901	Dunkirk.....	9,394,780
Sandusky.....	22,816,948	Buffalo.....	77,113,136
Venice.....	121,698		
Fremont.....	673,949		<u>\$195,932,373</u>

LAKE ONTARIO.—The first commercial district of Ontario which we shall notice is that of Niagara, comprising the ports of Oak Orchard Creek, Olcott, and Wilson on the lake coast, and Lewiston and Youngstown on the Niagara river. Lewiston is the port of entry of the district. It is situated on the east side

of the Niagara river, 7 miles from its mouth, opposite Queens-
ton, Canada. It has a population of 3,000, and communicates
with Buffalo and Lockport by railway, and with all the principal
ports of Lake Ontario by daily steamers.

As there are no definite returns from this district, in detail,
we can only give the totals for the whole district as follows, for
1851:

Total foreign trade,.....	\$689,769
Total coastwise "	670,318

Total commerce of the district,.....\$1,360,087

Next, proceeding eastward, is the district of Genessee, which
has but a very limited trade, there being but one shipping port
on a line of 80 miles of coast. This port is at the mouth of the
Genessee river, 3 miles from Rochester. Its trade is entirely
Canadian, which was, for 1851, as follows:

Imports,.....	\$49,040
Exports,.....	913,654

Total,.....\$962,694

The imports from Canada are chiefly in British vessels.

The next district eastward is that of Oswego, embracing the
ports of Texas, Salmon River, Sandy Creek, Oswego, Little So-
dus, and Sodus Point. Oswego is the port of entry for the dis-
trict, and is in lat. 43° 25' N. and long 76° 37' W. Its popula-
tion is about 13,000. Its advantages for coast and Canadian
trade are very great, and by its rapid strides in progress, of late
years, it has attained an importance among the great business
marts of the lakes, which guarantees an indefinite increase of
its commercial and maritime power. Its advantages are three-
fold: its easy communication with New-York, Boston and Og-
densburg, by rail-roads and canals; its commodious harbor; and
thirdly, its direct communication with the most populous parts
of Canada.

The trade of Oswego, for 1851, was as follows:

Imports, coastwise,.....	\$6,083,036
Exports "	11,471,071
Imports from Canada,.....	1,784,412
Exports to Canada,—foreign goods,.....	915,900
" " domestic "	2,291,911

Total trade,.....\$22,546,330

The Canadian trade of Oswego is nearly one-half of the entire
trade of the United States with Canada. The trade of the other
ports of the district is merged in that of Oswego.

The district of Sackett's Harbor is the last on Lake Ontario.
It includes several small ports, none of which are important, ex-
cept Sackett's Harbor, which is situated on a deep inlet, called

Black River Bay, in lat. 43° 55' N., and long. 75° 57' W. Its population is about 5,000. Its harbor is the best on Lake Ontario. Although this place possesses many natural advantages, it has been on the decline for several years. Its entire trade, coastwise and Canadian, for 1851, was only \$879,165. In 1846 it was \$2,735,091; and in 1847, \$2,141,445. The cause of this decline is undoubtedly owing to the fact that Sackett's Harbor has none of those great rail-road connections which have so rapidly built up other cities—almost in a day.

The entire trade of Lake Ontario, then, may be set down as follows:

Niagara district,	\$1,360,087
Genessee "	962,694
Oswego "	22,546,330
Sackett's Harbor "	679,165
Total,	\$25,748,276

Here closes our rapid but faithful review of the trade of the five great lakes, Superior, Michigan, Huron, Erie, and Ontario. We are now able to sum up the entire trade of those lakes, for 1851, as follows:

Superior,	\$1,675,000
Michigan,	58,468,029
Huron,	29,805,054
Erie,	195,932,373
Ontario,	25,748,276

Total,	\$311,828,732
If to this we add the trade of Lake Champlain,	26,390,895

We have for the trade of all the lakes,

The tonnage of all the lakes is as follows:

Steamers,	74,000 tons.
Sail vessels,	138,000 "
Total,	212,000 "

The entire number of steamers on the lakes, in 1851, was as follows:

Champlain,	17
Ontario,	17
Erie,	114
Straits of St. Clair,	12
Michigan,	14
Superior,	6

The above statement of the amount of the trade of the lakes is probably far short of the truth, since the returns are very imperfect, there being none from several places.*

* For more minute details regarding the lake trade, we refer the reader to Mr. Andrews' very elaborate and valuable report, and to the papers contained in the previous volumes of the Review, condensed into the *Industrial Resources*, from which Mr. Andrews has freely drawn when treating of the resources of the South and West.

Art. V.—THE GEOGRAPHY OF COMMERCE.*

THE WINDS AND THE CURRENTS—THE TIDES AND THE SEAS—THE UNITED STATES OBSERVATORY AND LIEUTENANT MAURY.

THE time is probably not far distant when the popular will, no less than the enlightened good sense of the statesmen of the country, will settle practically how far the government of the Union may be permitted "to provide for the general welfare," by the encouragement of science. Custom in such matters, whence no further usurpations can possibly arise, becomes almost as authoritative as a constitutional sanction; and unless we greatly misapprehend the character of the American people, few will be disposed to blame herein a leaning to the liberal side. The temptation to aid the national genius in the acquisition of those unfading laurels, awarded by universal consent to the successful discoverer of what is truly great and widely useful in these fields, might tempt the most rigid constructionist to relax here his rules, and admit, if possible, an exception to his political creed. The fame of one illustrious philosopher, one of the founders of American independence, is already blended with the history of human thought as well as political enfranchisement; and whether the spirit in which he pursued knowledge, or the magnitude of his additions to the common stock, are considered, it must be admitted that his example still modifies all legitimate inquiry into the august secrets of Nature. The era of Franklin was but the dawn of modern science. The laws, the modifications, and the analogies of light, heat, chemical affinities, and electricity, in its Protean forms, were then just emerging to human ken. The stone tables, on which, as on the leaves of a book, the earth's history are imprinted, were at that time united by unbroken seals. Observation had not yet accumulated a mass of records, nor been sufficiently extended to trace the varying intensities of the great powers of nature over the surface of the earth, and thus create a true philosophic geography. It is worthy of mention, that one of the most important features of our planet was pointed out by the great Franklin, and that he traced that portion of the ocean stream which rushes past our shores, and bestows on Western Europe its genial and temperate climate, its fertilizing showers, and

* Explanations and Sailing Directions to accompany the Wind and Current Charts, approved by Com. Charles Morris, Chief of the Bureau of Ordnance and Hydrography, &c. Published by authority of J. P. Kennedy, Secretary of the Navy. By M. F. Maury, LL.D., Lieutenant U. S. N., Superintendent of the National Observatory. 5th edition. Washington, C. Alexander, Printer, 1853.

abundant harvests. Since that period there have been travelers, like Humboldt and Von Buch, who have measured mountains and gauged streams, watched the fires of the volcano, and explored the causes of those powers that sweep the surface or shake the depths of the earth. Every year the number of observers is increased; the circle of stations at which these investigations are prosecuted is continually widening; while commerce, allured by the promises of greater and more certain gains, bids fair soon to be pressed into the zealous service of science. Physical geography, the most attractive of the departments of the study of Nature, embracing the view and discussion of her phenomena on the widest field that man can grasp, by the aid of all the senses, and presenting subjects at once uniting the enjoyments of the imagination and the reason, and gratifying the passion for knowledge and the desire of profit, is now for the first time possible. The various *meters*, the delicate instruments of modern research, the product and realization in art of scientific progress, are now in the hands of every traveler. He reads off their scales the temperature of the air, the earth, and the ocean, the heights of mountains, the quantity of moisture contained in the air, and many similar relations are by their means accurately ascertained and measured, at every point whither man can penetrate. Governments have rivalled each other in fitting out expeditions for research and exploration; and if the cultivation of the sciences under the direct patronage of our own, notwithstanding such precedents, be questioned, as on another long vexed subject, we may suppose that the popular voice will incline to advance this cause whenever it can be done in an incidental way.

The valuable volume of "Sailing Directions," by Lieutenant Maury, is but among the first fruits of what we may reasonably expect from the patriotic and liberal character of the officers of the navy and army. The younger officers are now, as a class, admirably qualified, by their tastes and education, to second any system of scientific observation that may be adopted by the national authority. The coast survey and the naval observatory were the first steps made in this direction by the government, and they have already well repaid all that has been laid out in their maintenance and prosecution. The equipment and *material* of the Washington Observatory may be inferior to the imperial endowments of Pultowa or Greenwich, but the genius and untiring industry of its superintendent has already given it a world-wide celebrity. When the exacting and ceaseless duties of his station are considered, it is astonishing how he should have accomplished so much for the geography of commerce and navigation, as may be inferred from the articles in the "Sailing Directions," or when he found time for the arrangement and

tabulation of the observations contained in thousands of log books, the results of which gigantic labor we find in the same volume. We propose to look at what has been thus accomplished by Lieutenant Maury for commercial geography, under the three heads: first, the establishment of a regular system of observation, to be carried out by the various national and commercial marines of the world; second, the contributions already made to science by the materials collected under the direction, and arranged by the author; and third, the practical rules and directions which are therein laid down for the guidance of the navigator, with the results already obtained by following them.

These undertakings have received the sanction of the most distinguished physicists of the age, among them the illustrious Humboldt, who, in writing to a friend, (Dr. Flügel, U. S. Consul at Leipzig,) says,—

"I beg you to express to Lient. Maury, the author of the beautiful charts of the winds and currents, prepared with so much care and profound learning, my hearty gratitude and esteem. It is a great undertaking, equally important to the practical navigator and for the advance of meteorology in general. It has been viewed in this light in Germany, by all persons who have a taste for physical geography. In an analogous way, anything of isothermal countries, (countries of equal annual temperature,) has, for the first time, become really fruitful. Since Dove has taught us the isotherms of the several months chiefly on the land—since two-thirds of the atmosphere rests upon the sea—Maury's work is so much the more welcome and valuable; because it includes at the same time, the oceanic currents, the course of the winds, and the temperature."

It is comparatively easy to map out the course of rivers over the land, and follow them from the glacier of the mountains to the ocean estuary, through their channels. This is but the visible half of the ceaseless circle which the waters make over the land. A far more difficult task it is, to track the viewless winds and weigh the watery freights they carry from the ocean, and lay down so slowly and gradually in the fog, the dew, the shower, and the noiseless snow; or to pursue the oceanic currents that feed these thefts of the winds, and map out their path—

Parietibus textum cæcis iter.

The solution of the grand problems of physical science connected with navigation do not rest there; they overflow to other branches of human labor and interest. Agriculture, and the health and happiness of mankind, are blended with the course of the winds and the distribution of heat and moisture. The farmer, as well as the mariner, looks up and watches the appearance of the heavens; and plentiful crops and prosperous voyages equally depend on the agencies which set in motion the winds, and uplift the clouds from the ocean. The beauty

and impressiveness of these signs, in which Nature addresses Man, render them worthy of the poet. Happy he who can read them aright.

THE LANGUAGE OF NATURE.—“The wind and rain, the vapor and the cloud, the tide, the current, the saltness, and depth, and temperature, and color of the sea, the shade of the sky, the temperature of the air, the tint and shape of the clouds, the height of the tree on the shore, the size of the leaves, the brilliancy of the flowers—each and all may be regarded as the exponent of certain physical combinations, and, therefore, as the expression in which Nature chooses to announce her own meaning; or, if we please, as the language in which she writes down the operation of her own laws. To understand that language, and to interpret aright those laws, is the object of the undertaking which those who co-operate with me have in hand. No fact gathered in such a field as this, therefore, can come amiss to those who tread the walks of inductive philosophy; for, in the hand-book of Nature, every such fact is a syllable; and it is by patiently collecting fact after fact, and by joining together syllable after syllable, that we may finally seek to read aright from the great volume, which the mariner at sea and the philosopher on the mountain see spread out before them.”

Among the friends and collaborators of Lieut. Maury may be mentioned Dr. Buist, a distinguished *savant* of India, who announces, in the transactions of the Bombay Geographical Society, that the Assistant-Secretary, Mr. Macfarlane, “has made considerable progress in the construction of wind and current charts, founded on the information supplied by ships’ logs, and on the principle of Lieut. Maury.” What has been done for the Indian and the Northern Atlantic Ocean reveals the value of concert of observation among the navigators and meteorologists of the world. In a letter to Lieut. Maury, dated 17th November, 1851, Dr. Buist, after alluding to a vast mass of facts collected by observers in the Indian seas, observes:—

“Three years since, I began to perceive that we had certain classes of storms that occurred periodically, not only all over India, but all over the region to which my information extended, and that these were synchronous, or nearly so. I then began a series of maps, illustrative of the matter.”

A system of stations and the co-operation of navigators is naturally suggested by what has already been done. It must be seen, that a true science of meteorology is impossible from local observations. We may watch the height of the barometer, and record the amount of moisture in the air, set rain gauges for ever, and yet be merely accumulating facts that in themselves have no significance. The relations of the river, the rain, and the ocean, are not local; they belong to universal geography, and are, literally,

“General, as the casing air,”

the atmosphere which forms the invisible link in the mighty

orbit of the waters about the earth. Nature herself seems here to refuse to be evoked by the efforts of the individual mind, and demands for the revelation of her secrets to be everywhere watched. We look upon the plans proposed by Lieut. Maury to compass this, as amongst the most important scientific movements of the day. The letter of Dr. Buist, before referred to, and one received by Lieut. Maury, about the same time, from C. Meldrun, Esq., Secretary of the Meteorological Society, gave encouragement that they were practicable.

Towards the end of the year 1851, the idea of a conference between the meteorologists of Russia and those of the United States was suggested by Kupffer, a laborious meteorologist of the former country; and about the same time a proposition was made by the British Government that that of the United States should co-operate in making these observations at certain foreign stations, and according to instructions prepared by General Burgoyne, Inspector-General of Fortifications. This was felt to be an auspicious moment to secure concert of action among meteorologists on shore, and co-operation among navigators at sea everywhere; and Lieut. Maury then, in reply to the British proposition, suggested that sea and land should be included as the field, and that a general conference of meteorologists and navigators should be held to discuss the plans, draw up the forms, fix the standards, and select the instruments to be employed on this grand field of research.

A UNIVERSAL SYSTEM OF OBSERVATIONS.—The basis originally proposed by the British Government to that of the United States, is contained in the instructions drawn up by order of the Inspector-General of Fortifications, Sir John Burgoyne, the circular letter of Lord Palmerston to British consuls, and that of Lord Glenelg to Colonial Governors. Nineteen principal stations in the colonies of Great Britain were selected as the points of regular record. These were to be supplied with sets of instruments of similar construction. Twenty sets were to be sent to India, by the Board of Directors of the East India Company, and provision made of the same character for observations at Ascension, Rio de Janeiro, Callao and Valparaiso. The letter of Lord Palmerston to British consuls has reference to the labors of Col. Reid in developing the theory of storms, and the investigation "of the laws by which storms and variable winds are governed," and requests their co-operation in procuring information "on facts connected with the atmospheric phenomena in question," and to transmit a half-yearly abstract of the same to the home government.

The circular addressed to the officers of the government of India, desires them—

"Upon the occurrence of any hurricane, gale, or other storm of more violence than usual, to note accurately the time of its commencement, the direction from which the wind first blows, whether in gusts or regular, and whether accompanied with rain, thunder and lightning, or other phenomena. Also, to note, with as much accuracy as possible, the changes of direction in the wind, and the time of occurrence of each; and lastly, the duration of the gale, and in what quarter the wind is when it ceases. The variations of the thermometer and barometer at each period noticed will also be of importance, if the means are forthcoming of making such observations."

On the transmission of these instructions to the United States government, for the purpose of securing its co-operation in the plan, Lieut. Maury brought forward as an amendment a system of universal observation on sea as well as on land, and securing the assistance of the commercial marines of the civilized nations of the earth in carrying out its details. We copy the following from the paper of Lieut. Maury, on this subject:

"The plan, though it fully recognizes the value of the aid which governments can give, by no means overlooks the importance of that kind of co-operation and aid which is to be derived from the hearty good-will of good men, and from the voluntary co-operation of that powerful corps of meteorological observers and navigators who labor in the private walks of life.

"Man is a meteorologist by nature;" and every one who observes the wind and the weather, and who is in the habit of noting the thermometer and the barometer, is already an observer, whose services it is desirable to secure, and whose labors in the field meteorological the plan in contemplation proposes to make available. In like manner, "all who go down to the sea in ships" are invited to co-operate: for they, too, are observers. That this immense corps of laborers who are already in the field should act in concert and "pull together," is the object of the present plan. Therefore, the men of science, the scientific societies, the shipowners and ship masters, the directors of corporations, and the faculties of universities, and the members of the various institutions for the promotion of science, and good men every where, are requested to lend this scheme their good-will, their influence, their aid, and their co-operation.

"The importance of concert among meteorologists all over the world, and of co-operation between the observer on the shore and the navigator at sea, so that any meteorological phenomenon may be traced throughout its cycle both by sea and land, is too obvious for illustration, too palpable to be made plainer by argument; and, therefore, the proposition for a general conference to arrange the details of such a comprehensive system of observations, addresses itself to every friend of science and lover of the useful in all countries.

"The domain of this science is the atmosphere: its boundaries embrace the land and cover the sea. To comprehend the laws which govern the movements of a machine so vast as it is, requires that its operations should be observed in all its parts, and watched from all points at the same time. Its motions are freer and less obstructed over the water, than they are by the land and across the mountains. Indeed, the ocean itself may, in one sense, be regarded as a grand expression of meteorological agencies; therefore the good-will and friendly co-operation of private ship-owners and masters, in all maritime countries, is considered of great importance to the cause in hand."

The proposition for a universal system of observation, as suggested by Lieutenant Maury, was soon after submitted to

the Royal Society, and, so far as an extension of these to the sea is concerned, it received a warm approval. The report adopted by the society recommends that instructions similar to those given to American shipmasters, according to the scheme submitted by Lieutenant Maury to the Bureau of Ordnance and Hydrography in 1842, be given "to every ship that sails" from British ports, with a request to transmit the results of them to the Hydrographer's Office of the Admiralty. The labors of the two greatest naval and commercial nations of the world, it is hoped, may be thus united in promoting the interests of navigation.

At this moment we have the satisfaction to know that the preliminary step has been taken, and that a convention of meteorologists is now about to be held at Brussels, and Lieutenant Maury is now absent in attendance upon its deliberations. That its results may be to secure the great end of obtaining these world-wide observations, will not only greatly advance the interests of science and navigation, but tend to elevate and educate the large and useful class of men now attempted to be attracted to the study of nature on the mighty deep.

The additions that have been made to geographical science since American shipmasters have been engaged, under the guidance of Lieutenant Maury, in the business of watching and recording the course of the winds, the clouds, and the currents, have not been few or unimportant. The power of such discoveries in changing the course of trade is well illustrated by the influence of the Gulf Stream on the trade of Charleston. During the colonial times, the course of trade was to make that port the half-way house for vessels bound from England to the northern ports. If driven off the coast during the winter by gales and snow storms, they returned to Charleston, and there remained until spring. When Dr. Franklin taught the mariner to know when he crossed the banks of this ocean river, by dipping a thermometer into the water, it was, to use the graphic words of the navigators, as if blue and red lines were drawn on the ocean. This discovery shortened the passage to the west from sixty to thirty days. It changed the course of trade. Vessels, instead of running to Charleston to avoid a snow-storm, now stood off for a few hours, thawed out the ship and her crew in the warmth of the Gulf, and were ready for another attempt to make their port. The commercial ascendancy of New-York, according to Lieutenant Maury, is due primarily to the discovery and use in navigation of the Gulf Stream, and secondly, to the establishment, by Jeremiah Thompson and Isaac Wright, of the regular packet line between New-York and Liverpool; and the change in the course of trade thus brought about, has destroyed the commercial ascendancy among the ports of the Atlantic seaboard once enjoyed by Charleston.

The view of the general circulation in the atmosphere, as traced by the investigations of Lieutenant Maury, is of the highest interest. The trade winds of the tropical seas have long been known, and form two links in the circuit of the winds around the earth. The ocean scenery of the region of the trades is among the most beautiful to the thoughts and the senses that can be conceived. The machinery of nature aiding so palpably the objects of man, and uniting lands divided so widely by the ocean; the canopy of flying clouds; the fresh and exhilarating breeze blowing day and night in one direction; the charming temperature and the moderate swell of the waves, make it the elysium of the mariner. The gentle spirit of the earth seems to be there bodily present; and the picture of a fleet hanging in the clouds, always an impressive object, becomes exquisitely poetic in its associations, when—

“They on the trading flood,
Through the wide Ethiopian to the Cape
Ply stemming nightly towards the pole.”

These trade winds are the great evaporating winds of the ocean; and, as we learn from the investigations of Lieutenant Maury, the belt of the S.E. trades in the South Atlantic is not only more extensive than the N.E. trades in the South Atlantic, but the winds themselves are fresher in the south. The very natural conclusion is, that the increased water thus taken up goes to feed in part the rivers of the northern hemisphere. At the equator these surface winds meet, and form a belt of calms, a node of upward winds, the northeast trade wind becoming a northwest upper current, and the southeast trade a southwest wind in the upper regions of the atmosphere overlying the north torrid zone. At the tropics, two other nodes of calms and of downward currents are met, with the two descending nodes of the orbit of the winds. The prevailing surface winds should now blow in spirals from the southwest towards the north pole, and in similar spirals from the northwest towards the south pole. At the poles the upward current produces another region of calms, whence the winds begin from north and south other revolutions towards the equator. And this system of winds is the source of

THE RAINS.

“To evaporate water enough annually from the ocean to cover the earth, on the average, five feet deep, with rain; to transport it from one zone to another, and to precipitate it in the right places, at suitable times, and in the proportions due, is the office of the grand atmospherical machine. This water is evaporated principally from the torrid zone. Supposing it all to come thence, we shall have, encircling the earth, a belt of ocean 3,000 miles in breadth, from which this atmosphere evaporates a layer of water annually 16 feet in depth. And to hoist up as high as the clouds, and lower down again, all the water in a lake 16 feet deep, and 3,000 miles broad,

and 24,000 long, is the yearly business of this invisible machinery. What a powerful engine is the atmosphere!

"In some parts of the earth the precipitation is greater than the evaporation; thus, the amount of water borne down by every river that runs into the sea may be considered as the excess of the precipitation over the evaporation that takes place in the valley drained by that river. In other parts of the earth the evaporation and precipitation are exactly equal, as in those inland basins such as that in which the city of Mexico, Lake Titicaca, the Caspian Sea, etc., etc., are situated; which basins have no ocean drainage. If more rain fell in the valley of the Caspian than is evaporated from it, that sea would finally get full and overflow the whole of that great basin. If less fell than is evaporated from it again, then that sea, in the course of time, would dry up, and plants and animals would all perish there for the want of water. In the sheets of water which we find distributed over that and every other inhabitable inland basin, we see reservoirs or evaporating surfaces just sufficient for the supply of that degree of moisture which is best adapted to the well-being of the plants and animals that people such basins. In other parts of the earth still, we find places, as the Desert of Sahara, in which neither evaporation nor precipitation takes place, and in which we find neither plant nor animal.

"In contemplating the system of terrestrial adaptations, these researches have taught me to regard the great deserts of the earth, as the astronomer does the counterpoises to his telescope—though they be mere dead weights, they are, nevertheless, necessary to make the balance complete, the adjustments of this machine perfect. These counterpoises give ease to the motions, stability to the performance, and accuracy to the workings of the instrument. They are *compensations*."

A strong corroboration of the hypothesis that the south-eastern trades are deflected into the upper regions of the atmosphere, is the fact that the occasional showers of dust to be met with in the Atlantic, not far from the belt of calms of Cancer, and in the neighborhood of the Cape de Verd Islands, and sometimes extending to the northern coasts of the Mediterranean, contain the remains of infusoria, whose habitat is not Africa, but South America, and the southeast trade-wind region of South America. These remains cause the red fogs and sea-dust of the North Atlantic, the Cape de Verd Islands, and the dust-winds of southwestern Europe.

THE EQUATORIAL CLOUD-RING.—The graphic essay on the above subject, by Lieut. Maury, is well known; it forms part of his theory of the circulation of the atmosphere, and the following is his explanation of its formation:

"In a clear day at the equator, this cloud-ring having slid to the north or south with the calm belt, the rays of the sun pour down upon the crust of the earth, and raise its temperature to a scorching heat. The atmosphere dances above it, and the air is seen trembling in ascending and descending columns with busy eagerness to conduct the heat off, and deliver it to the regions aloft, where it is required to give momentum to the air in its general channels of circulation. The dry season continues; the sun is vertical; and finally the earth becomes parched and dry; the heat accumulates faster than the air can carry it away; the plants begin to wither, and the animals to perish. Then comes the mitigating cloud-ring. The burning rays of

the sun are intercepted by it. The place for the absorption and reflection, and the delivery to the atmosphere of the solar heat, is changed; it is transferred from the upper surface of the earth to the upper surface of the clouds.

"Radiation from the land and the sea below the cloud-belt is thus interrupted, and the excess of heat in the earth is delivered to the air, and by absorption carried up to the clouds, and there delivered to their vapors to prevent excess of precipitation.

"In the meantime, the trade winds north and south are pouring into this cloud-covered receiver, as the calm and rain-belt of the equator may be called, fresh supplies in the shape of ceaseless volumes of heated air loaded to saturation with vapor, which has to rise above and get clear of the clouds before it can commence the process of cooling by radiation. In the meantime, also, the vapors which the trade winds bring from the north and the south, expanding and growing cooler as they ascend, are being condensed on the lower side of the cloud stratum, and their latent heat is set free to check precipitation and prevent a flood.

"While this process and these operations are going on on the nether side of the cloud-ring, one not less important is going on on the upper side. There, from sunrise to sunset, the rays of the sun are pouring down without intermission. Every day, and all day long, they operate with ceaseless activity upon the upper surface of the cloud stratum. When they become too powerful, and convey more heat to the cloud vapors than the cloud vapors can reflect and give off to the air above them, then, with a beautiful elasticity of character, the clouds absorb the surplus heat. They melt away, become invisible, and retain, in a latent and harmless state, until it is wanted at some other place and on some other occasion, the heat thus imparted."

THE GEOLOGICAL AGENCY OF THE WINDS.—The geological relations between the wind, the land, and the water, are shown to have an intimate connection with the fertility and habitable quality of each region. The largest portion of the surface swept by the southeastern trades is water; but those regions which lie to the northeast of South America and Africa, in the northern hemisphere, are deserts, and were it not for the inland seas of Europe and Asia, these regions would be still more extensive. In like manner, Australia occupies in the southern hemisphere a position opposite to the continent of Asia, and, being swept by winds borne over a vast extent of land, while in contact with the surface, is found to be mostly a desert. If this continental mass were removed so as to occupy the space in the South Pacific swept by the southeast trades, which blow as southwest winds over the basins of the great rivers and lakes of North America, the channel of the Mississippi would resemble that of the Australian rivers, and present a dry and dusty trough in the midst of a desert, the great lakes would be drained, and Niagara no longer resound with the whirl of its world of waters. If ever there was a time when the Andes and the Continent of South America were submerged, then the ancient winds that fell on the region of Central Asia, and the basins of the Caspian and Aral, were swelled with the waters that now are discharged, in part, by the Amazon and Orinoco into the ocean, and those

seas were united, forming a Mediterranean of vast extent, and probably discharging its waters by an estuary more magnificent than the St. Lawrence. According to the circulatory scheme of the atmosphere, the winds that play over the torrid zone of one hemisphere become the surface winds of the temperate zone of the other hemisphere. Fill up the south torrid zone, the region of the southeast trades, with land, and the north temperate zone would become one vast Sahara. Such, in brief, is the aspect of the dry season in the geological cycle, happily not co-existing with man's possession of the planet.

"The Saltness of the Sea" is the title of another of the series of interesting papers contained in the present volume. We are unable to do more than to state that it is to this quality, in connection with the evaporation caused by heat and the passage of the winds over the water, that the currents of the ocean owe their extent and depth. By these agencies, a general circulation of the waters of the sea is maintained; and so complete is it, that the per centage of its salt is found to be nearly the same in every part of the globe.

Following the discussion of a general circulation of the waters through the entire ocean, is the argument so intimately connected with it, and now so deeply interesting both to philanthropy and science, that a permanently open sea exists in the Arctic basin. The study of the currents of the ocean have led Lieut. Maury strongly to the conclusion, that the pole is surrounded by this sea instead of being piled by everlasting barriers of thick-ribbed ice. The report of Lieut. De Haven, the commander of the Grinnell Expedition, the first of the noble enterprises set on foot from the United States to aid in the discovery and rescue of the lost ships of Sir John Franklin, follows; and in the midst of the dangers of the dreary cruise during the long nights of those two polar winters, a ray of hope, faint though it be, hangs over the track of the intrepid Kane, who has dared again the perils of the Arctic Sea at the joint command of humanity and national glory.

DEEP SEA SOUNDINGS.—To determine the depth of the ocean, and approximately the outline of its abysses and shallows, will furnish data of the utmost value in completing the theory of the tides. We believe that American officers have been the foremost, and, with a few exceptions, the only investigators in this problem. Already they have contributed enough to make out a chart of the bottom of the Atlantic, which gives a general idea of the slopes and hollows of that ocean valley, and its transverse branches, the Caribbean Sea and the Gulf of Mexico. The first cruise of the "Fanny," the schooner despatched on this service of making these explorations, cleared up all doubts as to

the non-existence of certain fancied rocks and shoals which had been long enough bugbears to navigators. The following is the list of rocks found to be purely imaginary during the cruise.

	Latitude North.	Longitude West.
Ashton Rock.....	33° 50'	71° 40'
False Bermudas.....	32 30	58 40
Nye's Rock.....	31 15	55 50
Van Keulen's Vigia.....	31 40	38 20
Joryna Rock.....	31 40	23 45
Steen Ground.....	32 30	21 15
Mary's Rock.....	19 45	20 45

Lieut. Berryman, in the United States brig "Dolphin," reports, in 1853, that nothing has been found at the places indicated:

	Latitude North.	Longitude West.
Eight Stones.....	34° 22'	16° 40'
Jean Hammond's Rock.....	36 56	19 50
Haugault's Rock.....	40 58	48 40
Daralle's Rock.....	40 52	54 42
Haugault's Breakers.....	41 7	49 23
35 Fathom Shoal.....	42 32	45 17
— Rock.....	30 50	27 19

At some of these localities soundings were taken, with depths of from 2,200 to 4,600 fathoms. The greatest depth sounded in the Taney was in latitude 31° 59' north, long. 58° 43' west, on the 15th November, 1849, when 5,700 fathoms of wire were let out without reaching bottom. The form of the deepest portion of the North Atlantic is that of a γ , lying northwest and southeast, the two divisions being in the former direction, and stretching from 20° to 40° north latitude, and from 40° to 60° west long. Just on the verge of one of the divisions of the γ , the Bermudas rise from the sea, forming apparently a peak mostly submerged, of nearly six miles in height. The γ form is preserved in the next higher shelf of the bottom, only the tail is prolonged, forming a long trough between the two continents of South America and Africa. Two lines of soundings have recently been run across the Atlantic by Lieut. Berryman, in the Dolphin; they confirm the supposition, that the depth of the North Atlantic is nowhere greater than 5,000 fathoms. No little practical difficulty is experienced in sounding these depths, and the best check, in fact it is indispensable, to observe the rate at which the wire or twine is delivered from the reel. Without this precaution, currents and counter-currents may operate on the line long after the plummet is on the bottom. The following is a series of deep sea soundings recently made from the brig Dolphin, Lieut. O. H. Berryman, and extracted from a letter of our author. It will be seen that it exhibits the profile of two lines carried across the North Atlantic.

Date.	Lat. N.		Long. W.		Depth in Fathoms.
	D. M. S.		D. M. S.		
Oct. 4, 1852.	39 39 00		70 30 00		1,000 no bottom.
" 7 "	41 12 00		62 38 00		2,200 bottom
" 9 "	41 40 00		59 23 00		2,600 "
" 10 "	41 40 00		56 01 00		2,595 "
" 11 "	40 36 00		54 18 30		3,450 "
" 20 "	41 07 00		49 23 15		4,580 "
" 24 "	43 40 00		42 55 00		2,700 "
" 25 "	44 41 07		40 16 00		1,800 "
" 26 "	33 08 00		16 10 00		2,950 no bottom.
Jan. 3, 1853.	34 15 00		16 45 00		2,298 bottom
" 9 "	36 49 00		19 53 45		2,950 "
" 9 "	36 59 00		19 58 00		2,500 "
" 29 "	30 49 00		27 25 00		2,200 no bottom.
" 30 "	30 45 00		27 31 00		2,480 bottom.
Feb. 3 "	27 05 00		28 20 26		1,700 "
" 4 "	29 21 00		30 48 00		2,580 "
" 5 "	31 17 00		33 08 00		2,400 "
" 6 "	28 55 00		35 49 00		1,800 no bottom.
" 8 "	29 13 30		41 20 50		2,270 bottom.
" 9 "	31 16 00		43 28 00		2,089 "
" 10 "	33 01 00		44 31 00		2,250 "
" 11 "	32 29 00		47 02 00		1,950 no bottom.
" 12 "	32 55 00		47 58 00		6,600 doubtful
" 13 "	33 03 00		48 36 00		3,550 bottom.
" 15 "	32 47 00		50 00 00		3,250 no bottom.
" 20 "	28 59 00		57 51 00		1,380 bottom.
" 22 "	28 20 00		59 44 00		2,900 doubtful.
" 23 "	28 04 00		61 44 00		3,000 bottom.
" 24 "	28 23 00		64 17 00		2,518 "
" 25 "	27 42 36		66 11 15		1,000 no bottom.
" 26 "	26 49 00		66 54 00		2,720 bottom.
" 28 "	28 16 00		69 24 00		2,950 "

THE CHARTS.—A series of charts has been compiled from the observations made by the numerous intelligent navigators engaged in the scientific enterprise set on foot by Lieut. Maury. The pilot chart is derived from these results. The ocean is divided into square districts, of five degrees in length on each side. The winds for each month in each district are then collated, and it is hence easy, knowing the prevailing set of the winds for each month, to decide upon the probability of finding in each district a favorable wind. The problem then assimilates to that of the engineer who is called on to make detours to avoid mountain masses in fixing on the best line for a road on land. The head wind is like an opposing ridge, while the probability of obtaining favouring gales is analogous to the gentle slopes and easy grades to be discovered by the practised eye and experimental lines of the engineer. A wind rose is formed for each of the square districts, on which it is easy to read off the number of times in every month of the year a wind was observed in each one of the sixteen points into which the compass is divided. On the much travelled routes of navigation there has been no lack of observations; in other districts, as, for example,

those between the routes around the southern capes of the two continents of Africa and South America, there are comparatively none.

The thermal charts are of no little scientific import, and from them we learn the office of the ocean in ameliorating the climates of the earth.

The chart of the trade-winds embodies the results of the observations made on these winds. One remarkable discovery has been made, and it is that the southeast trade region is wider than that of the northeastern trade in both oceans. The average line of division is about 9° north of the equator.

The whale chart, the object of which is to show the districts most favorable in each season for the capture of whales, is compiled on a principle not greatly differing from that of the chart of the winds. When we consider the numerous fleets engaged in this business, the value of having a systematic arrangement to enable the whaler to see at a glance where he will be most likely to encounter the objects of his search, must be at once seen and admitted. The following table exhibits the places at which most whales have been found, and may be considered the best whaling grounds:

SPERM WHALING GROUND ABOUT THE
EQUATOR.

Months.	Latitude.	Longitude.
	°	°
May to Nov., inc.	0 to 5N.	80 to 75 W.
Apr. to Dec., "	0 " 5 " "	85 " 80 "
Dec. to July, "	5S. " 5 " "	90 " 85 "
Dec. to March, "	0 " 5 " "	90 " 95 "
February	0 " 5 " "	125 " 120 "
All the year	0 " 5S. "	170 " 180 E.
All the year	0 " 10 " "	85 " 80 W.
All the year	5N. " 5 " "	95 " 90 "
All the year	0 " 10 " "	110 " 100 "
Aug. to Sept., inc.	0 " 5 " "	115 " 110 "
Nov. to Mar., "	0 " 5 " "	120 " 115 "
Dec. to April, "	0 " 5 " "	125 " 120 "
Jan. to June, "	0 " 5 " "	130 " 125 "
Feb. to June, "	0 " 5 " "	135 " 130 "
January	0 " 5 " "	145 " 140 "
Dec. to Jan.,	0 " 5 " "	155 " 150 "
March to May, ...	0 " 5 " "	160 " 155 "
Dec., Jan., Mar.,	0 " 5 " "	175 " 170 "
Dec., Jan., Feb.,	10S. " 15 " "	80 " 75 "
July to Nov., inc.	10 " 15 " "	85 " 80 "
July to Feb., "	10 " 15 " "	90 " 85 "
Nov. to June, "	10 " 15 " "	85 " 80 "

NORTH PACIFIC.

May, June, July,	25	to 30N.	140 to 145 E.
May to Aug., inc.	25	" 30 "	" 170 " 165W.
Apr. to Oct., "	30	" 35 "	" 145E " 170 "
July to Aug., "	25	" 35 "	" 140 " 145 E.
June to Oct., "	30	" 35 "	" 150W. 170 W.

RIGHT WHALING GROUND, SOUTH
* PACIFIC.

Months.	Latitude.	Longitude.
	°	°
Jan., Feb., Mar.,	20 to 50S.	45 to 50 E.
Sep., Oct., Dec.,	30 " 40 "	55 " 60 "
Oct., Nov., Dec.,	30 " 40 "	60 " 65 "
Oct., Nov., Dec.,	30 " 40 "	65 " 80 "
Dec. and Jan.,	35 " 45 "	90 " 95 "
Jul. to Nov., inc.	35 " 40 "	115 " 120 "
Nov. and Dec.,	35 " 45 "	120 " 130 "
January	45 " 50 "	160 " 170 "
Dec., Jan., Feb.,		
March and Apr.,	40 " 50 "	170E " 175W.

NORTH PACIFIC.

April and May, ...	40 to 45N.	145 to 150 E.
July to Oct., inc.	45 " 50 "	" 145 " 150 "
April and May, ...	40 " 50 "	" 150 " 155 "
May to Sept., inc.	45 " 55 "	" 155 " 165 "
May to Sept., "	45 " 55 "	" 165 " 170 "
May to Sept., "	50 " 55 "	" 160 W. 165W.
		and in Behring's Straits.
May to Sept., "	50 " 60 "	" 155 W. 130W.

SOUTH ATLANTIC.

Aug. to Dec., inc.	35 to 40S.	25 to 20W.
Aug. to Dec., "	35 " 40 "	" 20 " 5 "
Sept. to Dec., "	35 " 40 "	" 5W. " 10 E.

The concluding portion of the work is devoted to an analysis of the various routes of most commerce over the ocean. Navigators will find here a guide which will prove of value in short-

ening passages, by gaining the benefit of the experience of those who have led the way. A vast variety of tables attest the industry of Lieut. Maury in collating the materials furnished him. We copy the following table, showing the average passage on the California route for each month, the place of crossing the equator in the Pacific, and the best performances of some famous clippers:

Month of Crossing the Equator in the Pacific.	Days.	From the U. S. to the Equator in the Pacific.	Days.	Number of Passages from which Averages are determined.	Average from the Equator to California.	Days.	Number of Passages from which Averages are determined.	Place of Crossing the Equator in the Pacific.	Days.	Average from the U. S. to California.	Days.	Average Passage of the whole month from U. S.	Shortest Passage from the U. S. for the month.
January ..	89	2	20	2	105 and 110	109	109	109	109	109	109	109	By the
94	3	25.5	4	110	110	110	110	110	110	110	110	110	Sword Fish, 91 days.
77	23	1	115	115	115	115	115	115	115	115	115	115	
February ..	120	4	30	5	105	110	150	110	150	150	150	150	
126	2	27	2	110	115	153	153	153	153	153	153	153	
89	1	16	1	115	120	107	144.7	144.7	144.7	144.7	144.7	144.7	Seaman, 107 days.
March ..	107	2	42	1	90	95	149	149	149	149	149	149	
112.5	2	28.5	3	100	105	141	141	141	141	141	141	141	
106	5	25	5	105	110	151	151	151	151	151	151	151	
115	5	25	6	110	115	132	132	132	132	132	132	132	Surprise, 97 days.
104	4	25	5	115	120	132	132	132	132	132	132	132	
171	1	28	1	120	125	199	199	199	199	199	199	199	
April ..	110	28.5	2	100	105	138.5	138.5	138.5	138.5	138.5	138.5	138.5	
124.5	2	33.5	4	105	110	168	168	168	168	168	168	168	
115	2	30	3	110	115	141	141	141	141	141	141	141	Samuel Russel, 110
100	3	36	3	115	120	126	126	126	126	126	126	126	[days.
May ..	140	1	35	1	90	100	178	178	178	178	178	178	
—	34	1	100	105	105	105	105	105	105	105	105	105	
124	2	34.4	4	105	110	148.2	148.2	148.2	148.2	148.2	148.2	148.2	
110	3	27.7	5	110	115	140	140	140	140	140	140	140	
106	4	27	4	115	120	133	133	133	133	133	133	133	
June ..	109.2	4	32.2	5	100	105	134.5	134.5	134.5	134.5	134.5	134.5	Wisconsin, 124 days.
120.5	4	38.4	12	105	110	157.5	157.5	157.5	157.5	157.5	157.5	157.5	Wild Pigeon, 107
110.2	5	33	7	110	115	142	142	142	142	142	142	142	[days.
103	1	28	1	115	120	131	131	131	131	131	131	131	
129	1	39	1	120	125	168	168	168	168	168	168	168	
126	1	46	1	W. of	125	172	172	172	172	172	172	172	
July ..	103	3	37	4	100 and 105	131	131	131	131	131	131	131	
108	4	29	7	105	110	134	134	134	134	134	134	134	Staffordah, 101 days.
119.5	2	30.5	5	110	115	150	150	150	150	150	150	150	
114	4	25	5	115	120	139	139	139	139	139	139	139	
104	1	30	1	120	125	134	137	137	137	137	137	137	
August ..	91	1	29	2	100	105	119	119	119	119	119	119	
—	18	1	105	110	110	110	110	110	110	110	110	110	
120	5	32	7	110	115	152	152	152	152	152	152	152	
123	1	42	1	115	120	173	173	173	173	173	173	173	
71	1	19	1	120	125	90	143	143	143	143	143	143	Flying Cloud, 90 days.
Septem. ..	130	1	39	1	95	100	169	169	169	169	169	169	
117.5	2	33	2	100	105	150.5	150.5	150.5	150.5	150.5	150.5	150.5	
141	1	25	2	105	110	166	166	166	166	166	166	166	
118	3	29	6	110	115	126.3	126.3	126.3	126.3	126.3	126.3	126.3	Witch of the Wave, 115 days.
—	33	1	115	120	120	145	145	145	145	145	145	145	
October ..	—	44	1	95	100	—	—	—	—	—	—	—	
90	2	26	2	100	105	116	116	116	116	116	116	116	
102	1	25.7	5	105	110	125	125	125	125	125	125	125	
99	7	25	7	110	115	124	124	124	124	124	124	124	Sovereign of the
99.5	2	25	2	115	120	124.5	124.5	124.5	124.5	124.5	124.5	124.5	[Seas, 103 days.
November ..	—	33	1	90	95	—	—	—	—	—	—	—	
93	1	29	1	100	105	122	122	122	122	122	122	122	
102	1	23	4	105	110	125	125	125	125	125	125	125	
115.5	4	25.2	5	110	115	130.7	130.7	130.7	130.7	130.7	130.7	130.7	Sea Witch, 106 days.
Decem. ..	151	1	35	3	105	110	184	184	184	184	184	184	
88	1	15	2	115	120	103	143	143	143	143	143	143	Comet, 104 days.

We have endeavored to give a sketch of the important labors begun by Lieut. Maury; and we rejoice to learn, that at last they

are appreciated by government, and approved by the mercantile world. The merchants of New-York and the merchants of Liverpool have united to do honor to the modest and laborious philosopher. The convention of navigators and meteorologists which he proposed has just taken place, and the plan he has advocated will be undoubtedly substantially adopted by that body. The influence of the various governments will be enlisted, and, under their recommendation, a body of material will be furnished for discussion, to the minds who will compare these individual contributions, and elicit the law which governs the course of the apparently wayward winds. From the chaos order will spring, and science, with slow endeavors, trace the works of that Eternal Wisdom, which in the beginning "set a compass upon the face of the deep."

Art. VI.—THE LAKE AND MISSISSIPPI VALLEYS.

THE garden of the North American continent lies along its longitudinal centre. As the gloomy forests which, but a few years since, lowered above its broad expanse, are cleared away by the hand of industry, the soil expresses its thankfulness for the sunlight let in upon it, by yielding such abundant crops of grain and of fruits, as might easily convince us that the corn-fields of the Nile had found more than a rival in the New World. The fame of its rich prairies has gone abroad, and from every part of the civilized world emigrants are pouring in, anxious to share in its abundant products, and to take a part in its unexampled prosperity.

Nature has not only given to it a prolific soil, but she has prepared for the immense commerce that such a country must invite, the best and most capacious of natural highways. A lake navigation unequalled in the world, either for its extent or for its freedom from obstructions, accommodates a considerable portion of it. The noblest of the earth's rivers runs through it, affording, upon its capacious bosom, abundant room for the whole carrying trade of the world.

Yet excellent as are these natural channels of trade, they are not superior to the adaptedness of this region for the construction of artificial channels. Railroads may be built all over it with almost unexampled cheapness, and wherever canals may be thought more profitable, it is rare to find impediments to their construction.

The portion of the United States embraced within this region is yet in its infancy. The sites of most of its principal towns were wildernesses within the life-time of persons now liv-

ing. Its lakes were "desert wastes of water" within the recollection of those still young. It was but the other day when its inhabitants were compelled to import a considerable portion of its breadstuffs, and were, in a great measure, dependent upon older states for the ordinary comforts of life.

Yet though still in its infancy, it has already become a country of ten millions of inhabitants, producing yearly six hundred millions bushels of grain, and a million and a half bales of cotton. It not only now returns with usury the breadstuffs it imported but a few years ago, but its beef, its pork, its butter and cheese, its flax and hemp, its fruits and wine, are finding their way, in considerable quantities, into various parts of the world.

Look abroad upon this region; examine its soil, its varieties of climate, its immense capabilities for production, and its advantages for the exchange of its products, as well between its own inhabitants as with the rest of the world, and you will perceive that the commerce already grown up is but the faintest foreshadowing of that which is to follow. The country that now supports ten millions of people, is capable of supporting the whole present population of the globe. The territory that now produces six hundred millions bushels of grain, may, with proper cultivation, be easily made to produce ten thousand millions. However vast may ever be its population, it has still within itself an abundance of the most useful minerals—iron, coal, copper and lead, to supply their necessities; it can always be made to furnish them with their clothing, their sugars, their fruits in extensive variety, and, doubtless, also both their teas and coffee, as well as nearly all the other conveniences and luxuries of life.

Varied as are the productions of this region, but few of them can be profitably raised over a large extent of territory. The sugar-cane has its natural locality, and cannot be made to approach the region of the lakes. Wheat likes the long winters of the Northern States and of Canada, while cotton is as sensitive to the cold as the cane. The sweet and the Irish potatoes do not like the same neighborhood. The best fishing-grounds of the territory are located at one extreme, and its mineral wealth is scattered unequally over it. Its best pines, as well as its best oaks, are localized. In the exchange of these various articles will some day grow up a commerce, compared to which the foreign commerce of the country is now, and always will be, insignificant.

Contemporaneous with the infant growth of this commerce are starting up cities to act as its receiving and distributing points. Located in a country that from a wilderness has grown up like magic into a family of wealthy States, they, too, have

had a growth equally magical. But as the commercial exchanges that are to give them their greatest impetus have but just begun, so also is their present prosperity but an inkling of their future greatness.

The growth of commerce in any country is more rapid than the increase of population. No man, perhaps, lives so much within his own resources as the settlers of a new country, who, from necessity, becomes a jack-at-all-trades, and subsists upon the few articles his little improvement produces. As the country becomes settled, a division of labor takes place, and the farmer exchanges the products of his fields for the clothing, which, before, himself had inconveniently manufactured. With a greater density of population comes a necessity for a larger proportionate use of vegetable food, for nature sets narrow limits to the population which a given extent of country may supply with animal food, but spreads out everywhere a soil whose vegetable resources seem constantly to increase with the increasing demands made upon them. Yet commerce is increased by this greater consumption of vegetable products, in proportion as vegetable is greater in variety than animal food.

Commercial exchanges increase rapidly also with the increase of wealth, for the real necessities of life may be produced by industrious poverty almost anywhere, while wealth must always purchase a large share of its luxuries beyond the limit of its immediate neighborhood. And so it happens that the commerce that with a sparse and poor population was merely nominal, as the latter becomes more dense and wealthy, increases in a still more rapid ratio.

The South has been accustomed to look upon its cotton and sugar as its staple products; and so, to a considerable extent, they always will be. But when the Lake and the Mississippi valleys become more intimately united, there will be as many mouths in the Northern States and in Canada, to be fed with southern fruits and vegetables, as there are people now to be clothed with southern cotton. It must not be supposed when Cleveland, Toledo, and Chicago are forty hours distant from Mobile and New-Orleans, that their inhabitants will wait the slow opening of the northern spring before they will indulge in the vegetables and delicious fruits that load the tables in the Gulf cities. Nor at any season of the year will the South want for edibles of northern production, and least of all, for the refreshing ice that robs the enervating summer of half its languor. As the food is vastly more expensive than the clothing, so is this commerce, of which we now see but the small beginnings, to be proportionately more important than that which supplies us with our cottons, our woollens, and our other dress goods.

Besides, while nature in a warm climate yields its largest return for agricultural labor, so that the Southern States will always be most eminently agricultural, so a colder climate is more naturally a manufacturing region, because of the greater cheapness of labor. Not indeed, that wages will be less, but that the amount accomplished by the laborer is in a great degree proportioned to the vigor imparted to his limbs by the atmosphere in which he works, and is sensibly diminished by the enervating effect of the southern sun. While, therefore, the greater proportion of the raw material that is to supply the food and clothing of these great internal valleys is to be grown south of the Ohio, an equal proportion of its manufacture will be north of that river.

It is idle to compare the growth of the towns that are favorably situated to be concentrating points for this great commerce, with that of those seaboard cities which depend mainly upon the comparatively insignificant foreign commerce for their sustenance. The world has never before seen cities situated in circumstances favoring so rapid and permanent a growth. The world has no other such valley as that of the Mississippi, extending through so many parallels of latitude, and through such a variety of animal, mineral, and vegetable productions. No other country has such capabilities of producing within itself almost every necessary, convenience and luxury of human life which the world affords. And, as a natural consequence of these advantages, no other country has ever had its capacity and its resources developed with the same rapidity as is now observed in this central basin of North America.

ART. VII.—RESOURCES AND PROGRESS OF PHILADELPHIA.

MR. TYSON'S LETTER TO MR. PETER.

No. IV.

PERMIT me, for an instant, to go back to the manufactures of Philadelphia, before resuming the subject of its commerce. The amount of capital employed in these factories, their magnificent annual results, the superiority of the fabrics, and the unexampled number and variety of the steam-engines in operation, do not comprise all that may fairly be said of the prospects of these establishments, nor of the degree of excellence which they are destined to attain. The manufacturing spirit so observable at the earliest period of colonial times, was fostered by the utilitarian principles of our forefathers. They taught, as a part of their religious system, the duty of *useful employment*. They enforced this precept with the emphatic authority of law, and

confirmed it by adding the sanction of their own example. The English and German Friends inculcated the importance of *trades*. Penn recommended them to his children; and many respectable persons of his own sect, especially in Pennsylvania, carried the sentiment into practice. The manufacture of articles of domestic necessity became a favorite occupation with our people. To the diffusion of this practical taste may be ascribed the happy idea of those scientific associations, which united to form the American Philosophical Society in 1743, and the more recent establishment of the Franklin Institute. In the latter, the scientific principles of the mechanic arts are taught to multitudes of young men, by the ablest teachers.

American skill will moreover be largely aided and improved by the *Philadelphia Female School of Design*, lately begun under the auspices of the Institute, and now connected with it, in the full tide of success. It would be unjust, in referring to this beautiful appendage and valuable auxiliary of the *fine* as well as the *useful arts*, to omit a passing tribute of gratitude to the gifted and accomplished benefactress of her sex and country, to whom we are wholly indebted for its introduction. But I will not do further violence to her feelings or your own, than to observe that, by the aid of this school, the genius of the nation will have a new and rich field opened for its exercise. By means of the drawings and patterns so felicitously executed by its pupils, our country will be enabled to impress upon the products of her industry a character as national, as distinct, as original, and I have no doubt as tasteful, elegant, and varied, as the most celebrated specimens of France and England.

But considerable effect must be produced upon the personal characters of mechanics and manufacturers by the influence of the Girard College for Orphans; perhaps the wisest and most beneficent institution of the nineteenth century. After adequate mental training within its walls, the pupils are to be taught *manufactures, navigation*, or some other practical or *useful employment*. From the three hundred inmates now receiving its bounty, there will, in a few years, be a *thousand*, who, snatched by its protection, in early childhood, from the evils attendant on orphanage and penury, and instructed by its paternal discipline in youth and nonage, will form a class of candidates for the manual occupations of life, more numerous and better instructed than any age or country has ever incorporated with its society. These exposed classes, from which the almshouse and prison are supplied with victims, are made by the sagacity of the founder to give rank and elevation to the mechanic and artisan, and add new dignity and value to their social claims. Such are the elements at work in our midst, to push to their acme the highest efforts of American mind, in the useful departments

of art and skill. Who can say, with such aids, what Philadelphia may not achieve as an industrial locality? In the possession of the materials of cheap manufacture, and cherishing a high standard of workmanship, what may she not accomplish with the proclivities of her people, assisted by training and enlightened by science?

But to proceed with the subject of foreign commerce. The mercantile marine of the port cannot be large, to sustain an importation of only twelve millions, and an exportation of less than five millions a year. Since the year 1846, the cash duties received at the Custom-house of Philadelphia, have stood as follow:—

For 1847...	\$2,904,748 97	For 1849...	\$2,714,965 24
" 1848...	2,762,093 11	" 1850...	3,361,112 18

There is every reason to believe that, for the present year, duties received at our custom-house will exceed *four millions of dollars*. For a long period anterior to the epoch of 1846, one solitary line of sailing packets to Liverpool graced the port of Philadelphia. These vessels sailed, at stated periods, once a month; and, though built in the most substantial, and equipped and furnished in the best manner, yet, without voluntary shipments of merchandise by their owners, they would have frequently departed and returned without a cargo. But our venerable townsman, Mr. Thomas P. Cope, being identified with the port as an importer of foreign merchandise before the year 1790, as a ship-owner since 1807, and having established, in conjunction with his sons, his unsurpassed line of packets in the year 1822, perhaps other feelings than those of mere pecuniary profits have influenced their continuance through all vicissitudes. It has survived the period when freights were in demand, and now finds itself in the society of three other packet lines to Liverpool, with business enough for all. These several lines of packets are composed of capacious and excellent ships, not only well filled with cargoes of merchandise, but, if I am correctly informed, *vessels* are in requisition rather than *freights*.

Within the period of five years, many noble merchantmen have been built at this port, and among them two for the old line of H. and A. Cope & Co., each of 1,700 tons burthen. Sailing vessels of the best description, and of a high tonnage, have been constructed and placed among the other lines, within the same period. Less than a year ago was commenced a line of steam propellers from Philadelphia to Liverpool, and as the vessels composing it have proved themselves unequalled for strength and speed, they have imparted increased activity to commerce, and diffused the most cheerful anticipations. Freights and passengers accumulate to the utmost capacity of these

steamers. The packet ships to Bremen and New-Orleans, and the steamers to Charleston, Richmond, and New-York, with various transient vessels, make up the residue of that commercial marine, which is represented in the tabular statement which I have quoted, of the foreign and coastwise arrivals. In addition to these, a line of steam-vessels for the Boston trade is in preparation and nearly ready to sail; and an active movement is on foot, with encouraging prospects of success, to communicate more speedily and regularly with New-Orleans, by means of the same great staff of commercial intercourse.

In this enumeration of vessels constituting the mercantile navy of Philadelphia, we look in vain for voyagers to London, to France, or to China. The mercantile marine has certainly improved, as well as the exports and imports. But the time is not remote when from four to six East Indiamen were seen lying at our docks together. At that time a cargo from China could not find purchasers in New-York. Now, no China ships here are to be seen, and their cargoes are not offered for sale in Philadelphia. Nay, several tea houses exist among us, whose importations are made exclusively through the more favored port of our neighbor. But in continuation of this humiliating contrast, compare the exports from Philadelphia of 1796 with those of 1850. In the former year, the value of goods exported from Philadelphia was more than *seventeen millions and a half of dollars*, and in the latter was only *four and a half millions*! In 1796, our population was about *seventy thousand persons*; in 1850, it approached *half a million of inhabitants*!

In order to heighten this contrast, though it cannot give pleasure to a Philadelphian, it may be well to see how this pyramid, terminating at a point with us, has been inverted by our more fortunate rival. In 1796, the exports of New-York, when she contained about 55,000 inhabitants, amounted to about *twelve millions of dollars*; and in 1850, when her population bordered on *half a million*, her exports amounted to \$52,712,789.

While thus far these figures are worthy of reliance, and present an inequality sufficiently remarkable, it may be proper to add that the statistics of the two cities, as presented by the writers of New-York, are generally wide of the mark, and transcend the bounds of truth and fairness. For example, a statistical table, prepared in New-York, professing to give the comparative population of the principal cities of the commercial world, assigns to Philadelphia, in 1840, a population of only 222,493. This would depress her in population below the cities of Lisbon and Dublin. The census of that year exhibited the number of 258,037 inhabitants, and entitled her to rank beside Liverpool, whose population she now exceeds. Another recent table of New-York statistics, in regard to trade and tonnage,

shows a series of blunders, and the figures, as arrayed, are made to express a language approaching to mendacity itself. The same spirit of hyperbole on the one hand, and of depreciation, descending almost to disparagement, on the other, appears in most of the general and particular delineations of Pennsylvania, which emanate from that quarter. If, as the English writers assert, the disposition to magnify is an American trait, that tendency of the American character is as discernible among our brethren of New-York as anywhere upon this continent. They have certainly much to be proud of, in the luxurious splendor of their crowded and opulent city. Nevertheless, a fair examination would show—not merely a spirit of imitation on the part of New-York, in adopting the conveniences and elegancies of Philadelphia, but—that her commercial prosperity has been mainly owing to a temporary oversight, a voluntary dereliction of natural duty, on the part of Philadelphia. Is not all this apparent from the history of Pennsylvania, in comparison with New-York, from the earliest period, showing her capacity for larger shipments, and the susceptibilities of the port under a proper guardianship, with adequate cultivation? In 1697, Pennsylvania had been settled fifteen years, and New-York about half a century, and yet the value of the foreign trade of the latter was only £8,000 above the former. Take a subsequent period, say 1760, when Pennsylvania had let in the sun to her smiling fields, and you find that her exports and imports amount to £720,000, and New-York only to half a million! This superiority in her commerce was, with some variations, generally maintained during the colonial government. In 1774, it exceeded that of New-York by about £150,000; but the dangers of the revolution disturbed its current, and gave to New-York a temporary advantage. In 1790, the commerce of Philadelphia amounted to \$7,953,418, and in 1796, to \$17,523,866, being more than six millions in advance of New-York!

It is thus manifest that the foreign commerce of Philadelphia bears no just proportion to her ability to sustain it, nor to the requisitions of the internal trade. Such, on the contrary, is its capacity of enlargement, that it is augmented in magnitude and profit by the increase of the marine, or the multiplication of the means provided for conveyance. It results, then, that some defect must prevail in our policy, the removal of which is indispensable to the restoration of the proper measure of Philadelphia commerce. Let us see what this is, and whether the evil is adscititious and remediable, or intrinsic and unalterable.

In surveying the cause of a weakness in any particular part of a system, the cause of any partial and anomalous decay, where the organic functions are sound, and all the other members are vigorous and healthy, it is obvious that the complaint must

arise from some temporary or casual agency, rather than from constitutional defect, or the existence of vital disease. We shall find, in the case before us, that what looks like a general distemperature, which stagnates the juices and disturbs the processes of nature, is nothing more than the want of local exercise of the part, the product of accident or mistake, the result of unnatural and voluntary inaction.

We have seen that the annual imports of Philadelphia do not much exceed twelve millions of dollars. Does this amount of foreign merchandise supply the consumption of Philadelphia—as well the quantity required for her own population, as the large demands of her numerous customers in the South and West? If twelve millions be wholly insufficient, whence is the immense residue derived, but through another port and in other bottoms than in those of Philadelphia—that is, through the port and in the bottoms of New-York? That this desertion of Philadelphia is *the true cause of the decline of her commerce* is evident; and a little reflection will convince us of the truth of another proposition, equally self-evident. These large importations through the port and in the vessels of New-York, *constitute the real source of the unparalleled prosperity of that city.*

In the year ending July 1, 1850, the value of foreign importations into the United States was one hundred and seventy-eight millions of dollars. When we consider the populousness and wealth of Pennsylvania, containing nearly two and a half millions of inhabitants, and the immense, wealthy, and populous regions beyond, which are either chiefly or wholly dependent upon her metropolis for their foreign supplies, is the estimate of *fifty millions of dollars*, as the aggregate value of foreign merchandise here used and distributed, more than her fair contingent? *As Philadelphia is admitted to be the great distributor and seller of merchandise to the Western and Southern country*, no one acquainted with the magnitude of the business, will deem the valuation of *fifty millions* other than inadequate. Of the one hundred and seventy-eight millions of our foreign imports, one hundred and eleven millions are introduced into the country through the port of New-York, and twelve millions through that of Philadelphia. It follows that less than *one-fourth* only of the commerce which belongs to this port is done by ourselves, and more than *three-fourths* are permitted to be done for us by strangers. In other words, *one-third of the entire commerce of New-York*, so justly her pride and boast, *is drawn from the custom of Philadelphia.* Take this one-third from New-York and give it to Philadelphia, together with its accompaniments and profits, and the two cities would stand in the positions which they should respectively occupy in regard to each other.

But we not only permit New-York to be the importer for

Philadelphia, and thus enable her to construct and sustain her noble and numerous ships, but we aid her by making direct contributions to her marine. Of the 34 vessels sailing between New-York and Canton, the interest of *more than one-sixth* of the whole is owned by citizens of Philadelphia. Thus Philadelphia supplies *one-sixth* of all the imports into New-York from China, without reaping a tittle of its benefits; and our merchants voluntarily import in her vessels, and through her port, the sum of *thirty-eight millions* annually.

Now, this state of things is not more humiliating than its mischiefs are extensive and deplorable. The expenses of breaking bulk and shipping the goods to Philadelphia, the profits on the cargoes, the commissions on the sales, the duties paid at the custom-house, are all so much grist to the mill, so much tribute paid into the coffers of New-York. But these vessels, thus laden with imports for the Philadelphia market, not only arrive at New-York, but *they carry away from New-York* rich cargoes in return. These exports it is which fill her rivers with crafts, burdened with the fruits of the field and the products of the factory, and which tax to their utmost capacity every avenue, by canal and railway, leading to New-York. Does not this subjection of our foreign commerce to the shipping of New-York abundantly explain the reason why so small a portion of the western produce which finds its way to the Atlantic is transmitted through our public works to Philadelphia? The law by which trade is governed, is that which the *market* commands. Where the highest prices are to be had, there, in despite of distance and difficulty, is the supply. In vain will closeness of neighborhood and facility of transit hold out their allurements, without that brisk and superior market which is excited by a lively and extensive foreign commerce. Philadelphia may build railways and excavate canals; she may open vast avenues to the furthest extremities of the West, the North, and the South; she may possess all the elements of a golden opulence in her noble State; yet, in the vicinity of such a rival as New-York, if she decline, or be not sedulous in fostering the opportunities of *the carrying trade*, all these advantages are valueless, every sign of prosperity is unreal, illusive, and shadowy. She will become effeminated by inactivity, and fall a suburban district, if not an unresisting prey to New-York. Though the most luscious fruit may hang from lofty boughs, and their bending garlands seductively wave in her view,—though her palsied hand may be stretched forth to grasp it, some fitful breeze will blow away the branches as fast as she approaches. But with a foreign commerce, commensurate in magnitude to the immensity of her resources, her natural and artificial highways will groan under the burdens of a trade hastening from the vast interior, and augmented from her own

magnificent domains. "It will," to use the language of one of her most sagacious men,* "raise her as a city to the very pinnacle of commercial grandeur; to the very first rank among those which have distinguished themselves as conspicuous marts; to the size of London, Canton, Calcutta—nay, *beyond that of any emporium on the globe.*"

Is the prize worth contending for? Are ease and inactivity so desirable in themselves, that we should relinquish all other blessings for their enjoyment? Should the merchant of Philadelphia hesitate as to the line of his duty? For every importation he orders through another city, he inflicts a deep injury on his own, and does a real injury to himself. He undermines the fortunes of his own community, by giving the nourishment necessary to sustain her, to another, whose absorbing demands are sapping the foundations of her own fortunes. He contributes to his own impoverishment, in abstracting from his home those elements of life and growth, upon which all within the domestic borders depends for vitality and vigor. An opposite policy would be to all the interests of Pennsylvania what the dew and the light are to vegetation, aiding them to expand and flourish. It would act as a vent to that sluggish internal trade, which, by means of the Pennsylvania Rail-road and the other improvements of the State, we have been so anxious to attract to Philadelphia.

In proportion as the foreign commerce is neglected or diminishes, the domestic trade will disappear or decline, while in the same degree as the former is fostered and enlarged, the latter is encouraged and accumulates. Foreign commerce and internal trade must go hand in hand, or stop in company; being mutually dependent, they must coexist or die together. All that is wanted are the requisite energy and will of our own people, to break down all opposition to a career for Pennsylvania, as peerless and triumphant as the unapproachable superiority of her natural resources. With only reasonable *sea room*, with merely a *fair chance*, by means of the possession of her legitimate business,—of that trade which is properly and intrinsically her own—of that commerce which is necessary for the supply of her own wants and those of her customers—Philadelphia would, in a few years, be restored to her original state, to her former ascendancy—THE METROPOLITAN EMPRESS OF THE WESTERN WORLD!

* Samuel Breck, Esq.

ART. VIII.—MISSISSIPPI BONDS.

No. II.

IN the June number of the Review was published a statement of the Planters' Bank bonds, issued by the State of Mississippi, and a desire expressed for a similar statement of the Union Bank bonds, issued by the same state. Stupendous works are contemplated, or in way of execution, throughout the South. Georgia is preparing to connect the Atlantic with the Gulf at Pensacola. New-Orleans has commenced its Opelousas Rail-road, which is destined to connect with the Pacific Ocean. The Mobile and Ohio Rail-road is also to connect with the Gulf of Mexico the vast Western States already connected with the net-work of the East; and so is the Great Northern Rail-road, now in process of execution from New-Orleans to the Mississippi State line. Texas, Mississippi, Arkansas and Missouri, have all joined in the great work; and last, though not least, we have the Isthmus of Tehuantepec, which, when opened by a plank or rail-road, will bring the two great oceans within twelve hours of each other—when a voyage from New-Orleans to San Francisco, by steamers, will be reduced to about ten days, and to China to forty days. The mind is struck with wonder, when gazing upon the map, at the immense territory embraced in the above works; at that wonderful net-work, which brings almost to our neighborhood the most distant points of the Union—which makes China as near to us as Liverpool, by sailing vessels—which, when completed, will do more for our Union than any compromise yet devised, by enabling our people, moving to and fro, to appreciate the absurdities of abolitionism with reality before them.

Who can foresee the treasures to be unfolded by the Opelousas Rail-road, as, proceeding in its western course, it throws open to emigration along its lines empires of virgin lands, only awaiting the hand of man to produce all the fruits of the earth? Who can set bounds to the mineral wealth to be disclosed by the iron road, through, as yet, unexplored New-Mexico?

New-Mexico, a century ago, was considered by Spain as the richest portion of her American domains, but she took especial care to conceal it from the world. It may be here of interest to give a short extract, from a letter written by the author of this paper, in the city of Mexico, in March, 1852:

"Sometime about the close of the last century, the king of Spain ordered all the documents and papers relative to this part of the world to be collected from the different archives of

his government, and arranged, with a view to the general history, 'de la America Septentrionale.' This great work was commenced by Don Matias, Don Bernardo de Galvez, and Don Manuel Flores, and completed through the exertions of his excellency, Don Juan Vicenti Huemes y Horcasitas, and the enlightened patronage of the viceroy, 'el Señor Conde de Revilla Gigedo,' in 1792. This collection, arranged, classed, and put up together in well-bound volumes, in the 'Convento Grande de N. S. P. S. Francisco de Mexico,' comprised 32 folio volumes of some 500 to 600 pages each, of which 31 volumes are yet here, each province under its proper head. The first volume, it appears, has been lost or destroyed in one of the many revolutions which, from the commencement of this century, have been distracting this devoted country, and which may sooner or later cause the destruction of the whole work. These 32 volumes are divided into two classes: 1st. Comprising the first 11 volumes, containing copies of manuscripts enumerated by the king of Spain in a royal ordinance, bearing date 21st of February, 1790. The 2d. Comprising 21 volumes, containing, in accordance with the same royal ordinance, 'all manuscripts and documents tending to give a true history of the antiquities, geography, government, civil and ecclesiastical, of America.' These are the words of the royal ordinance: 'Se copien y remitan, los manuscritos y documentos que se hallaran conducentes á ilustrar las antigüidades, la geógrafia, y la historia civil y eclesiastica é natural de America. (Here follows an analytical index of each volume.)

"Vol. 2. Contains a highly interesting account of New-Mexico.

"Vol. 3, 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29 and 30, each under its proper title, relate to Sinola, Sonora, Nueva-Biscaya, the two Californias, Cohahuila, Texas, Gulf of Mexico, with statistics, maps, reports on mines, gold dust, agriculture, rivers, &c.

"Vol. 2. 2d part, contains a very interesting manuscript, entitled 'Relaciones de todas las cosas que en el Nueva-Mexico se han visto y sabido así por mar como por tierra, desde el año 1538 hasta el de 1626. Por el Padre Geronimo Salmeron,' &c.

After expatiating upon the extraordinary wealth of New-Mexico, the Padre, f. 40-verso, proceeds thus:—

"Todas estas noticias de las grandes riquezas del Nueva-Mexico, y de la tierra en dentro, nõ las han ignorado los Españoles del Nuevo-Mexico, sino que no las merecen gozar, por los secretos juicios de Dios que nosotros no podemos corresponder, donde se vee cumplida la profecia de S. F. Diego de Mercado, Religioso de esta serafica religion, hijo de la Provincia de Ste. Evangelo, el qual viendo pasar, por el Pueblo de Tala, la tropa de gente quando Don Juan de Oñate entrò à poblar en Nueva-Mexico, dijo; *Por vida de Fr. Diego (que este era su juramento) que tiene Dios en aquellas*

partes remotas del Nueva-Mexico, grandes riquezas, mas por vida de Fr. Diego, que no las han de gozar, los presentes Pobladores, que no las guarda Dios para ellos; y asi a side pues todas los primeros han perecido sin gozarlas, y con gran dolor, por que siempre vinieren con estos deseos, y ancias deriquezas, que es el fin à que allà entraron à poblar, y gastaron sus Haciendas—Dios, nuestro señor, que es el sabedor de todas las cosas, sabe el quando, y el como se han de manifestar estas riquezas à los hombres, para que las gozan, que à el solo es dado de saberlo, que asi nos lo enseña diciendo: non est vestrum—non est tempora,” &c.

Which may be translated as follows:—

“All these accounts of the wonderful wealth of New-Mexico and of its interior provinces, were not unknown to the Spaniards of those countries; but it was not the will of God, whose decrees are inscrutable, that they should enjoy them; and thus the prophecy of St. Fr. Diego de Mercado, a priest of our seraphic religion, native of San Evangelo, finds itself realized. On seeing the men headed by Don Juan de Oñate passing through Tala, to settle New-Mexico, he exclaimed,—“*By the life of Fr. Diego, (as he was wont to swear,) God has, in these remote parts of New-Mexico, placed great riches; but, by the life of Fr. Diego, the present people shall not enjoy them. God does not hold them for them.* And so it has come to pass; for all the first pioneers perished without enjoying them, and in great pain, coming out as they did, with the thirst of wealth, with all its desires and anguish, and losing their all. God, our Lord, who alone knows all things, alone knows when and how this wealth is to be discovered to men, that they may enjoy it; and so he has said,—*non est vestrum—non est tempora.*”

But to return to our subject; that these more than Roman works will be accomplished, sooner or later, no American heart can doubt. Cotton, the monopoly of the South, has built power for England this half century;—cotton, the great power of present days, not next even to gold, will build the great rail-roads of its own great South, even if left to herself! In 1787, the whole exports of Great Britain only amounted to £16,870,114, or, in round numbers, \$75,000,000. Our present crop of cotton will not fall far short of \$144,000,000. In 1849 a crop of 2,700,000 bales brought down prices to 4½ and 5 cents. With a crop of 3,200,000 bales, prices have been sustained throughout the season at an average of 10 cents! What prospects before us! What wealth must be accumulating in our South! And then every mile of the rail-roads under execution will be made productive as they open. Still it would be comparatively slow work, if we were restricted to our own immediate resources. To advance rapidly, these resources should be anticipated, and credit resorted to. How does the credit of the slave states stand with foreign capitalists? There can be no doubt that the whole South has been made to bear all the discredit involved in the charge of repudiation. Up to that time, Louisiana had stood pre-eminent for her public faith and credit: the state bonds issued in favor of the Union Bank, amounting to \$7,000,000, and bearing 5 per cent. interest, were promptly taken in 1832, by American and London capitalists, at a premium of 6½ per cent.

The bonds issued in favor of the Citizens' Bank of Louisiana, also bearing 5 per cent. interest, were taken by Holland in 1836, '37, '38, and '40, at an average of 3 per cent. premium, to the amount of nearly \$8,000,000. It is worthy of remark, that until the "repudiation" southern funds remained firm in Europe, despite the great commercial revulsion of 1837; for so late as June, 1841, a conditional sale for \$1,000,000 of the Citizens' Bank bonds was made to Messrs. Hope & Co., of Amsterdam, at one per cent. premium. That the suicidal act of Mississippi killed the credit of the slave states in Europe does not admit of doubt; and what has been the effect? Whilst the East has been borrowing from Europe, since the eventful times of 1837 and 1843, hundreds of millions of dollars, for its great internal works, at fair rates, the South has been forced into inaction and liquidation by the suspicion of capitalists, here and abroad, though wielding the greatest power on earth—cotton! See how the public funds of Alabama, although ever true to her faith, have been dragging all along in European markets, whilst Massachusetts and New-York have been finding eager lenders for schemes of all sorts. See our own Louisiana redeeming honorably, by anticipation and otherwise, nearly fourteen millions of her public debt in eight years—say from 1844 to 1852—without producing any perceivable effect upon European capitalists. See our own noble city, issuing out, by a bold measure, from a state of inertness and of extreme confusion, to a state of vigorous health, its public debt secured by taxation and mortgage on the real estate of the city; and see the luke-warmness of the London market for these funds.

Art. IX.—AGRICULTURE.

AGRICULTURAL CONDITION OF JAMAICA; REPORT OF THE JAMAICA HOUSE OF ASSEMBLY—GRAPE CULTURE IN THE UNITED STATES—GUANO; DISCOVERY OF A NEW AND IMMENSE DEPOSIT OF GUANO—SUGAR PLANTATIONS IN THE SANDWICH ISLANDS—PARAGUAY COTTON.

THE agricultural condition of Jamaica is a subject which exhibits, in a striking manner, the immense mischief and ruin that has often attended the practical workings of a species of pseudo-philanthropy, such as now prevails in England, France, and in the northern States of this Union. This pseudo-philanthropy has absolutely ruined the French and English West Indies, so far as all successful agriculture is concerned, as may be seen by a single glance at Jamaica, St. Domingo, and the islands belonging to the French. To show in a nut-shell the blessings that British

abolitionism has lavished on Jamaica, one of the gardens of the world, we invite the attention of our readers to the following returns of the House of Assembly of Jamaica, dated January 27, 1853, of all properties in the island of Jamaica upon which cultivation has been wholly or partially abandoned since the 1st day of January, 1852:

	Sugar Estates.		Coffee Properties.		Pens or Country Seats.		Number of Acres.
	Totally aband'd.	Partial aband'd.	Totally aband'd.	Partial aband'd.	Totally aband'd.	Partial aband'd.	
St. Catharine.....	2	—	—	—	3	—	4,105
St. John.....	5	—	1	—	5	—	17,025
St. Dorothy.....	1	2	1	—	1	1	5,578
St. Thomas in the Vale.....	9	4	25	3	—	—	26,420
Vere.....	5	—	—	—	—	—	9,273
Clarendon.....	10	—	1	—	2	—	24,576
Manchester.....	—	—	8	2	—	—	6,673
St. Mary.....	8	7	—	—	—	—	17,846
St. Ann.....	8	1	19	18	2	—	29,367
Port Royal.....	1	—	2	3	—	—	2,956
St. David.....	6	1	10	4	4	—	16,005
St. Andrew.....	4	7	3	6	—	—	15,106
St. Thomas in the East.....	18	9	3	—	—	—	37,935
Portland.....	3	8	—	—	—	—	15,225
St. George.....	2	8	12	10	3	5	37,063
Metcalfe.....	2	2	6	13	—	—	15,248
St. Elizabeth.....	4	1	5	6	10	16	43,633
Westmoreland.....	9	5	—	—	—	—	18,510
Hanover.....	13	5	—	—	—	—	18,149
St. James.....	7	5	—	—	—	—	11,480
Trelawny.....	11	6	—	—	—	—	18,984
Total.....	123	71	96	66	30	22	391,187

From this it will be seen, that in the short space of one year, nearly *four hundred thousand* square acres, or more than *six hundred* square miles, of the finest land on the earth's surface, in whole or in part, has been abandoned, and is now running to weeds! And this is the process which has been going on ever since the passage of the Emancipation Bill.

And all this abandonment, poverty, and ruin, is for what? To enable a few crazy fanatics of England to carry out a theory—a mere theory, begotten by ignorance and fostered by fanaticism. England has ever had an immense amount of philanthropy and of the milk of human kindness to lavish upon the negroes of America; while millions of her own white subjects are immersed in a system of servitude and starvation in “happy England”—saying nothing of the oppression and slavery of millions of British subjects in England's East India possessions. If English men and English women would first exhaust a little of their milk of human kindness upon the millions of their miser-

able, half-starved, and over-tasked brethren at home, they might then, with some show of consistency, turn their eyes abroad.

But England begins to be aroused to a sense of her folly. A northern contemporary* very justly observes, that the British government have been for some time in great perplexity on the question, what they shall do with the island of Jamaica—once the Queen of the British Antilles, but now bankrupt and ruined—and, in fact, good for nothing? To copy the language of the present Governor, Sir Charles Grey—"The fertility of its soil, and fitness for both tillage and pasturage, the richness and variety of its vegetable products, the alternations of mountain and valley, the numerous hot springs and medical waters, the known existence of various and valuable minerals, the timber and ornamental woods of its forests, the abundance and variety of fish on its coasts and neighboring reefs, indicate peculiar facilities for the promotion of the future welfare and prosperity of its inhabitants, and warrant the hope that, low as it has now fallen, it will not be permitted to relapse into utter barbarism." Nevertheless everything indicates, and the English themselves with great reluctance admit the fact, that such must be the fate of this beautiful and fertile island. It has become already what may be called a "model abolitionist establishment." The slaves were set free before they were qualified to take care of themselves, and the consequence is, that while men are plenty, there is nobody to do work. The land is capable of producing, in abundance, sugar, coffee, cotton, fustic, logwood, mahogany, ginger, sarsaparilla, beeswax and honey; also the pimento spice, of which nature has assigned to it a monopoly. It possesses great facilities for rearing horses, cattle, sheep, pigs, &c., and its copper mines contain rich deposits. It contains within itself the elements of unlimited prosperity, but is so completely fallen away from its former prosperous condition as to be in a state of practical bankruptcy.

The ruin and desolation of the island involves both land-holders, employers, and negroes. The latter are just what negroes have ever shown themselves to be, when without a master to look after and control them—a miserable and thriftless race.

From papers recently laid before the British Parliament, it appears that since the emancipation of the slaves, more than six hundred estates in the island have been abandoned. These plantations once gave occupation to upwards of 50,000 laborers. All the expedients that have been employed by the local government to arrest the ruin of the island have proved unavailing, and the inhabitants are now beseeching Parliament to do something for their relief. But what can Parliament do for a territory which is ruined for want of cultivation, and yet is full of a population

* The Boston Courier.

that will not work? All the sensible portion of the British people confess that the emancipation of the West India negroes was a most thoughtless and inconsiderate act—a “tremendous mistake.” But there are some among them who refuse to believe that any evil can possibly follow the “immediate and utter abolition of slavery.” Such persons ascribe the misfortunes of Jamaica to the repeal of the corn laws and other measures of that character; but they are not fond of being asked *how* these things can prevent men from digging the ground. We have not heard of any project in contemplation by the home government of Great Britain for the rescue of this once valuable colony, though the subject is contemplated with a deep and mournful interest by all who take pride in Britain’s supremacy.

Instead of emancipation having been a blessing to the negro in Jamaica, it has been the greatest curse that ever fell upon them. While under their old masters, they had enough to eat, drink, and wear, and when sick were well attended. But now, what a change: they wander over the island half-fed, half-clothed, and more like savages, than any other race of beings living within the limits of the civilized world. And in addition to the general indolence and poverty into which they have sunk since their emancipation, must be added the decline of the Christian religion among them. It is stated that they are fast relapsing into their old superstitions of Fetichism and Obeah worship, which they brought with them from Africa, and that they are now seen paying their devotions to snakes, toads, and old ragged puppets. We give these statements as we find them in English publications. They may or may not be colored higher than the truth; but of the general fact that the blacks have declined to a most deplorable and ruinous extent into sloth and ignorance, there can be no dispute.

It would be to no purpose to ask the leaders of the anti-slavery party to think of these things. Men who make a *trade* of philanthropy will, of course, shut their eyes to such disagreeable facts. But to really honest men of that party, we may put the question, whether they quite understand what they are about in calling for the “immediate and ultra abolition of slavery.”

As the subject of abolitionism has been discussed *ad nauseam*, we cannot think of dwelling upon it any longer.

The subject of grape culture is becoming a very important one in agriculture, and is engaging, more and more, the attention of agriculturists in many parts of the country. Mr. Cist, in a late number of his advertiser, gives the following interesting account of the present and prospective condition of grape culture and wine-making in Cincinnati and the vicinity. He says:

“I have recently visited the wine-cellars of Messrs. Longworth and Zimmerman, on Sycamore street. Mr. Zimmerman,

the active partner, with his two sons, have been engaged in Europe for years in the manufacture of wine, and considers the Catawba a finer basis for first-rate wine than any in Germany or France. The drawing off and properly ripening wine they consider of more importance to the development of a fine article, than the original manufacture.

"The wine cellars of this establishment are 105 feet in length, an average of 35 in width, and 18 in height. Each season's wine is kept by itself, in casks of 2,000 to 2,500 gallons capacity, and none of our native wine is bottled in this establishment until it has been four years in casks. Thus, the wine bottled this season is the vintage of 1848, as that of next year will be the vintage of 1849. In this way the entire sediment, precipitated by successive fermentation, is retained within the cask.

"Messrs. Zimmerman will put up this season 30,000 bottles; in 1853, 50,000; and in 1855, 100,000. What will be done beyond that period, must depend on the yield of the grape crop in 1852, and later seasons. All this is Catawba wine, termed Still, in distinction from Sparkling Catawba.

"Mr. Longworth is engaged in the manufacture of Sparkling Catawba, at his wine cellars on Butler-street, off Broadway. He made, in 1850, 50,000 bottles; in 1851, 75,000, and this year he will put up 105,000 bottles. Sparkling Catawba requires fifteen to twenty months for ripening before being ready for market. Mr. L. has also dry and sweet wines—the first of the Catawba, and the other from the Isabella grape.

"Messrs. R. Buchanan, Corneau & Sons, G. P. Bogen, Reh-fuss, Yeatman, Miller, and others, are also extensively engaged in the manufacture of Catawba wine. All these persons label their wines. The aggregate annual manufacture of first-rate wine may be put down at 150,000 bottles Still, and 180,000 Sparkling Catawba.

"Probably 30,000 bottles Still Catawba wine is made, sold and drank in this vicinity by Germans, mostly the product of small vineyards. This is unbranded, and of various kinds—the greater part of inferior quality. But whatever may be the quality of our native wines, they are all pure: that is, from anything else than the juice of the grape. One or two manufacturers make sweet wines, to a small extent, acknowledged to be fictitious.

"The supply of native wines, greatly as it is on the increase, hardly keeps up with the increasing demand. All the wine older than five years, of Catawba, is out of market, and the Sparkling, although not requiring such a large lapse of time to fit it for use, is taken off as fast as it can be made for market.

"There are about 1,200 acres of grapes in cultivation in the vicinity of this city. Every year adds to the quantity of bear-

ing vines, and to the number of persons engaging in the business."

The country adjacent to Cincinnati has about 1,500 acres of land in cultivation and bearing vines; other places in the States of Ohio, Indiana and Kentucky, about 500; Missouri and Illinois, 200; together, 2,300 acres. The average crop of an acre is 200 gallons of wine; amounting therefore, in the aggregate, to 440,000 gallons annually, which sells readily at one dollar per gallon.

In 1840, the total wine crop of this country was only 124,000 gallons. In 1850 it was 221,249 gallons; being an increase of almost a hundred per cent. in ten years. The amount imported last year was 6,160,000 gallons—an amount which our country will be able to supply for its own consumption in sixty years, even at the present rate of increase.

Our difficulties with Peru, in regard to the Guano trade, arose mainly from the fact that Peru supposed she had a perfect monopoly of the trade, and that guano was an article which no other country or place could supply. This happy dream of the Peruvians is about to be sadly interrupted, by the discovery of an immense deposit of guano that has lately been made in the Indian Ocean, between Mauritius and Calcutta. It has been analyzed by Professor Anderson, of Glasgow, and is now also in the hands of Professor Way, of London, for analysis. Four kinds of it have been taken to England, two of which are of superior quality, resembling the guano of Saldanha Bay; the other two are comparatively inferior.

The discoverer relates that, being becalmed off an island, he sent his boats ashore for water. They returned without it, but told what they had found. The captain visited it himself; and having made several voyages for guano to Ichaboe, he at once pronounced the substance with which the island is covered to be guano. Having traversed the island in various directions, he found guano everywhere; its greatest depth, however, in the caverns and crevices of the rock. He secured samples and brought them home. The samples having been taken from near the surface, the quality is supposed to be inferior to what may be found beneath, as it is injured by the action of the weather. The deposit is reported to be immense, the island being twenty miles long by seven broad, and thus forty times as large as Ichaboe. There are no strong ocean currents near the island, and it is said that convenient loading stages can be erected with great facility, in the creeks and bays along its coasts. Steps are being taken to make the guano available to the British farmer.

This discovery shows what may be reasonably anticipated from a search in other quarters, and especially off the rainless coast of Peru. This is the true way to break down the mono-

poly of Peru, and to secure for the agriculturists abundant and cheap supplies of guano.

Many of our readers have probably heard something of the sugar plantations of the Sandwich Islands. A late number of the *Polynesian* furnishes us with the following statistics, in regard to the extent of the cultivation of sugar of those islands:

No. of Acres Cultivated.	1852.	1853.
At Lihue.....	200	580
Koloa.....	240	650
Honolulu, Maui.....	250	300
Makawno ".....	325	500
Hana ".....	45	130
Waimea, Hawaii.....	50	50
Hilo ".....	540	540
Total Acres.....	1650	2750

Taking the average yield at one ton, or 2,000 lbs. per year, we have, for this year's crop, 3,300,000 lbs., and for that of 1853, 5,480,000 lbs. At 5 cwt. per lb., the crop of 1852 will be worth \$165,000, and that of 1853, \$274,000.

An English journal, the *Manchester Guardian*, of the 27th of July, has a notice of the indigenous cotton of Paraguay. We saw, yesterday, says the *Guardian*, at the office of the Manchester Commercial Association, a sample of 269 bags of native Paraguay cotton, gathered in a wild state, and recently arrived in Liverpool from Monte Video. It is not cleaned, but has a long staple, like Pernambuco cotton, and is fine and strong in quality. Some parties—authorities as to the value of cotton—estimate it as worth 10d. to 12d. per lb.; others are inclined to rate it at a rather lower figure. But there can be no question that it is good, serviceable cotton, and that if it could be imported in a clean state and in good condition, it would soon be extensively used. It is reported that large quantities of this cotton grow wild in the country, far inland, but with good river communication. As Mr. Drabble, a mercantile gentleman who takes a strong interest in the culture of cotton, and who, through the Manchester Commercial Association, was furnished by the Earl of Clarendon with letters of introduction and recommendation to all her Majesty's consuls throughout the countries watered by, or bordering upon the river Plate, had arrived out at Monte Video, and would shortly commence a tour of observation throughout Paraguay, &c., we may shortly expect to learn something more definite as to quantities of this cotton growing wild, and the practicability of having it cleaned and shipped. It is scarcely necessary to add, that, in all tropical countries where the plant is found indigenous, it is perennial; and this adds considerably to the agricultural and mercantile value of the natural product.

Art. X.—COMMERCIAL AND FINANCIAL.

EXPORTS AND IMPORTS—SPECIE OPERATIONS IN NEW-YORK—INCREASE OF DUTIES COLLECTED—SURPLUS REVENUE—COFFEE TRADE AND PRODUCTION—GRAIN TRADE—EUROPEAN CROPS.

THE opening of the new fiscal year shows, that the astonishing progress manifested in our foreign trade since the first of January, 1853, is still exhibited. Taking the port of New-York as a tolerably good index of the state of the foreign commerce of the country, we have only to present its custom-house returns in order to convey a fair idea of the progress of that commerce. For the month of July, the first of the fiscal year of 1854, its trade far exceeded that of the same month of any previous year.

EXPORTS FROM THE PORT OF NEW-YORK FOR JULY.

	Specie.	Foreign Goods— Free. Dutiable.		Domestic.	Total.
1846.....	\$80,463	\$40,414	\$122,403	\$2,876,015	\$3,119,295
1847.....	27,670	42,735	79,255	6,687,681	6,837,341
1848.....	744,983	14,190	89,289	2,189,125	3,037,587
1849.....	138,352	23,508	396,471	2,953,622	3,511,953
1850.....	1,578,080	17,562	413,071	3,574,260	5,523,574
1851.....	6,604,170	2,311	284,394	3,188,027	9,478,905
1852.....	2,971,499	20,750	325,752	2,965,542	6,288,543
1853.....	3,924,612	313,192	447,201	4,882,957	9,567,962

Including ingots, the exports have been larger in amount than they have ever been before, and the famine year alone shows a higher range for domestic exports in July. As compared with last year the amount is nearly two millions greater. Of this amount flour reaches \$915,000, against \$475,000 in the same month last year. Of cotton, \$800,000, against \$300,000 same month last year, and the general movement is in a similar ratio.

The imports and exports for the seven months since January 1st have been as follows:

FOREIGN IMPORTS AND EXPORTS AT NEW-YORK FOR SEVEN MONTHS, ENDING JULY 31st.

Imports.		1852.	1853.	Exports.		1852.	1853.
Ent. for consump.....		\$58,498,029	\$93,558,807	Domestic produce...		\$25,111,363	\$30,305,347
Ent. for wareh's'ng....		5,451,668	13,587,589	Foreign merchandise			
Free goods.....		8,259,939	9,669,118	(free).....		541,978	1,010,669
Specie.....		2,028,248	1,009,516	Foreign (Dutiable)...		2,745,307	2,488,181
				Specie.....		15,595,508	12,579,594
Total imports.....		\$74,237,884	117,915,030				
Withdrawn from				Total exports.....		\$43,994,156	\$46,383,691*
warehouse.....		\$9,622,577	8,227,102				
Duties.....		\$17,491,100	\$25,807,436				

The specie operations of the port of New-York, from January to June, of the present year were as follows:

* United States' Economist, for August, 1853.—During the month of August, according to the "Economist," the imports for the port of New-York somewhat declined, there being a decrease of \$500,000, as compared with August, 1852. There has also been, during the same month, a greater quantity of goods entered there for warehousing than last year.

	1852.	1853.
Imports.....	\$2,028,248	\$1,099,516
Gold coinage at Mint.....	28,364,491	35,875,476
Supply.....	\$30,392,739	\$36,974,992
Exports.....	15,595,508	12,579,594
Excess supply.....	\$14,797,231	\$24,395,398

This has been the apparent operation as far as New-York is concerned. Of the \$24,395,308 accumulated since January, the sub-treasury has \$6,000,000; that is, it held \$2,554,894 January 1, and now holds \$8,474,931. The banks of New-York held January 1, \$10,342,450, and June 11, \$12,174,509, an increase of \$1,800,000; but from June 11 to August, the receipts of gold were \$7,750,000, and the exports \$5,400,000, leaving \$2,350,000 increase, of which 500,000 were in the sub-treasury vaults, and might therefore have raised the bank basis to \$14,000,000. These two sums would make \$10,000,000 of the receipts of gold gone into bank and government vaults, leaving \$14,000,000 apparently distributed into the interior of the country, affording abundant proof that, notwithstanding the large imports and sales of goods, the exchanges are in favor of the interior, as well from sales of produce as rail-road expenditure. It is also the case that some California ingots have been received and exported without appearing in the receipts; hence the accumulation is larger than appears in the figures.

This extraordinary condition of our foreign trade, is not, as we have before observed, the result of an inflated condition of the currency. "If the imports have been large, it is because the exports have also been large, and payment must be received by a gold-producing and exporting country in the shape of goods. The rise in prices which has actually taken place, it would seem, has prevailed as well abroad as here, growing out of the general influence of a larger supply of precious metals to the world's commerce."

The actual effect of this enormous increase of imports on the amount of duties collected is so great, that it has enabled the government to discharge the public debts as they accrued, and to leave \$22,000,000 in the treasury on the 31st of July, 1853. So far from expecting this, the treasurer of the late administration, Mr. Corwin, anticipated a deficiency, and actually asked for a loan of \$16,000,000 to enable him to meet the current expenses of the government.*

We have shown in the table given above, the great increase of exports for July last at the port of New-York. The following are the *imports* for the same month:

IMPORTS—PORT OF NEW-YORK.

	Entered for Consumption. Dry Goods.	Other.	Warehoused.	Free.	Specie.	Total.
1851.....	8,152,574	4,222,127	1,022,725	1,027,481	81,143	14,506,050
1852.....	6,459,592	4,994,525	423,919	915,154	150,067	12,942,251
1853.....	10,443,397	6,282,246	2,080,908	1,072,502	199,454	20,078,507

The returns from Philadelphia, Baltimore, Boston, Charleston, and other ports, also show, as well as New-York, the same remarkable increase in exportations.

The coffee trade continues to exhibit activity, the increase in importations being very considerably above what they were at this time last year. From the coffee circular of Andrews and Morris, for Philadelphia, the imports up to the 1st of August, since January 1, 1853, were as follows:—Rio, 84,629 bags; other descriptions, 34,529 bags; total, 119,158 bags; same period last year, direct, 90,046 bags; increase of imports this year, direct, 29,112 bags.

For Baltimore, the statement up to August 1, is as follows: Imports of coffee since January 1, 1853, of Rio, 130,112; do. of other descriptions, 12,025 bags; total, 142,137 bags; ditto same period last year, of Rio, 108,186 bags; ditto other descriptions, 19,588 bags; total, 127,774 bags; increase of importation this year, 14,363.

The production of coffee, throughout the whole coffee-world, is on the decline. In Cuba, where the crop was once so flourishing, it is now reduced almost to nothing, in comparison. The abolition of slavery in the British West Indies has nearly abolished it there. In St. Domingo the decline is immense. In Java the production has fallen from 150,000,000 lbs. in 1848, to about 110,000,000 lbs. In Brazil the stoppage of the slave-trade has greatly checked the production. In Ceylon, from a want of government protection, as is alleged, the coffee product has fallen off several millions of pounds, and large capitals have been lost and estates abandoned. Laguayra, too, has suffered a decline in coffee. The entire production of coffee is as follows:

PRODUCTION OF COFFEE, 1848 AND 1853.

	1848.	1853.	
Brazil.....	270,000,000 lbs	280,000,000 lbs.,	or 1,750,000 bags.
Java.....	150,000,000	110,000,000	or 800,000 piculs.
St. Domingo.....	40,000,000	45,000,000	
Cuba and Porto Rico	40,000,000	30,000,000	
British West Indies	10,000,000	5,000,000	
French and Dutch			
West Indies.....	5,000,000	3,000,000	
Sumatra.....	10,000,000	15,000,000	
Mocha, &c.....	5,000,000	5,000,000	
Manilla.....	3,000,000	2,000,000	
Ceylon.....	25,000,000	30,000,000	
Laguayra.....	30,000,000	25,000,000	
Costa Rica.....	5,900,000	5,000,000	
Total production,	590,900,000	556,000,000	

This decline has been mainly caused by its having ceased to be a profitable crop in most places of production, and by the short crops in Brazil, Java and Ceylon. Should prices advance, some may expect a corresponding increase of production, as of sugar or cotton; but when it is considered that it requires ten years at least to get a new coffee estate into full bearing, and that labor, the chief capital employed, is from 150 to 200 per cent. higher in Brazil than it has been, it cannot be looked for to any great extent, certainly not equal to the average increase of consumption the past twenty-five years.

The consumption of coffee has rapidly increased the past twenty-five years, from its low price, facilities of transportation, and ability of the masses to purchase what was formerly considered a luxury, so that it has now become a necessary of life. The greatest increase has been in the United States, averaging seven and a half per cent. per annum; in Europe it has been two and a half per cent., or for the world four per cent. per annum.

The following estimate of consumption is the average of various sources, and is believed to be as near the truth as can be ascertained, for 1852: United States and British America, 200,000,000 lbs.; German Zollverein, 100,000,000 lbs.; Austria and other German States, 65,000,000 lbs.; Holland and Belgium, 80,000,000 lbs.; France, Switzerland, and South of Europe, 110,000,000 lbs.; Great Britain, 35,000,000 lbs.; Denmark, Sweden and Norway, 25,000,000 lbs.; Russian Dominions, 15,000,000 lbs.; Cape of Good Hope and Australia, 10,000,000 lbs.—Total consumption in 1852, 640,000,000 lbs.*

We have not space to include the annual commerce of New-Orleans, for the year which closed on the 30th August, but must postpone it to our next number. The total receipts of cotton were 1,645,000 bales; stock, 10,500; crop, 3,200,000. Total value of produce received, \$134,000,000; of which cotton, \$68,250,000, sugar, \$15,500,000.

The *Journal of Commerce* gives the revenues of the United States for the year which ended 30th June, 1853, \$61,106,744, against \$49,728,386, the year before; and \$52,312,979, in 1851. On this basis it is estimated that the total—

Year ending June 30,	Dutiable Imports.	Free goods and specie.	Total imports.
1853.....	\$225,000,000	\$30,000,000	\$255,000,000
1852.....	183,252,508	29,692,934	212,945,442
1851.....	191,118,345	25,106,587	216,224,932

* United States Economist, August 6.—In our last number the production of coffee in the world was estimated at 476,000,000 lbs., on the authority of Mr. Lonsdale's circular, (see page 302.)

There are substantial grounds for believing that the grain trade will be a flourishing one during the coming year. The grain harvest is, to say the least, unpromising in most parts of Europe; a failure of the English crop is anticipated; in France the present crop is found to afford less than an average yield, and the last crop is quite exhausted. A rise in the price of bread has created, during the past summer, among the working classes in Paris, great excitement and complaint, leading to animated discussions in the open streets respecting the prospects of the harvest. This certainly speaks badly for the grain crop of France. Letters from Italy announce a failure in the grain crop there—that the wheat crop is far below expectation—and that Tuscany will be compelled to import corn. Bread in Paris has risen 18 per cent. since the 1st of July, and the quantity of corn in store is very small.* From all this it would appear that the prospect of a steady demand for American grain, in Europe, is nearly certain, even if there should be no war there.

Art. XI.—INTERNAL IMPROVEMENTS.

RAILROAD SLAUGHTER; HOW IT CAN BE REMEDIED—DEFECTIVE LEGISLATION ON THE SUBJECT—PROPOSED LEGISLATION—NUMBER OF ACCIDENTS AND DEATHS ON RAIL-ROADS DURING THE PAST SUMMER.

BEFORE entering upon our usual monthly summary of internal improvements, we wish to say a few words regarding the frightful disregard of human life which has been exhibited on some of our most important rail-roads during the past summer. We say disregard of human life, for it can certainly be nothing else! We need not enumerate the accidents that have happened, and the number of lives that have been lost, for these are matters of general notoriety; but we cannot avoid a few words of censure

* The following, from the *Journal des Debats*, will give some idea of the consumption of grain in France. That Journal says:—

It must never be forgotten that the corn trade is regulated by the cost of transport. Wheat is a very heavy and bulky article, and all the sources of supply, the United States and the Black Sea, being at a great distance from our ports, it is very important, under present circumstances, that we should be able to obtain supplies from a neighboring entrepot, as Liverpool, London, Malta, or Gibraltar. It is calculated that the consumption of grain in France, independent of oats for horses, is about 80,000 hectolitres, or 30,000 tons per day, so that every day's supply requires 75 vessels, of 400 tons each, to transport it. We may thus judge of the immense amount of shipping required, when, as in 1847, it was necessary to import 10,000,000 or 12,000,000 of hectolitres, or from 800,000 to 1,000,000 tons, which, after all, only represents a supply sufficient for twenty-five or twenty-six days. The transporting of such a supply requires about 2,000 vessels.

applicable to those roads that have stained their tracks with human blood. Steamboats had long been dreaded for their destructiveness of human life, and people cherished the hope, when rail-road cars came to take the place of them, that these were to afford better security to the lives of travelers; but how sad is the disappointment; instead of greater security there is greater destruction.

But why, we ask, should these frightful rail-road accidents so often occur? We answer, because men are, in these times, and in this country at least, more heedful of money than of human life. They care more about high speed than human safety. To save a minute, or a dollar, they are often ready to jeopardize the lives of a whole train of passengers. We do not say that rail-road men deliberately sit down and premeditate rail-road slaughters; but we do say, that they sit down daily and premeditate the ways and means of saving time and dollars, *without thinking* that their plans involve the *possibility* of a frightful slaughter of human beings. And here is where they are to blame. They are to blame, and ought to be severely punished, for suffering even the *possibility* of an accident to travelers; because, unlike steamboats, it is possible on rail-roads to prevent all accidents by using proper care, and incurring the necessary expenses. The evil of this latter item—the necessary expenses—these rail-road men do not like to incur.

What are these necessary expenses, which, if incurred, would prevent rail-road accidents? This question could easily be answered by rail-road directors, if they felt disposed; but they always prefer being entirely silent on the subject, and endeavor to make it appear that they have done all they can do to prevent the destruction of human life. Who believes them?

What they could do is this: they could have double tracks, in the first place; 2d, they could, by being a little more liberal with their money, employ intelligent, faithful and respectable "switch-tenders;" 3d, they could employ trusty and industrious men to walk the entire track, daily and hourly, in order to keep it clear, and see that the track is in order; 4th, they could have telegraphs to communicate information from post to post along the line; and 5th, they could have such rules and regulations regarding "turn-outs," as would effectually prevent the possibility of collisions.

Passing over the requirement of a double track, let us examine all the other requirements which we have laid down above. Why are there so many accidents through the carelessness, or something worse, of "switch-tenders?" It is because, to save a few cents a day, rail-road directors entrust the important care of a "switch" to some miserable, careless, drunken vagabond, who cannot be relied on—who, because his employers are care-

less about rewarding his services with a salary that would command an intelligent and faithful man, thinks that he too may be careless about his duty, and about the lives depending on his care. He gets nothing for his services worth an honest man's notice, and he labors according to what he gets. His pay is small, very small, and he makes his labors as light as possible as an offset. All this is very natural. It grows out of the pitiful, penurious, nay, murderous parsimony of rail-road directors. It is all to save a few cents a day. The traveling public and their friends suffer the dreadful consequences.

Again, men could be employed, at short intervals, along rail-road tracks, to keep them in perfect order and free from all obstruction. This is done in England, and in Europe generally; and this prevents the possibility of accidents from obstructions. Why is it not done in this country? Because, again, rail-road directors love money too well to incur such an expense. They think that, on the whole, it is better to let travelers take their chance of losing their lives from obstructions on the tracks; as although a few lives—which are nothing—might be occasionally lost, the rail-road company would save money by it, and have a greater dividend to distribute. In this matter, we say, again, rail-road directors are *criminally* to blame; for if they do not take all possible precaution for keeping the tracks clear of obstructions, they are guilty of suffering the *possibility* of fatal accidents.

Again, some of the principal roads have no telegraphs to indicate the movement of trains, &c., along the tracks, or to give other information necessary for the safety of trains and passengers. Is not this a criminal neglect? We think it is—and one highly criminal, too. The late awful destruction of human life, on the Amboy line, would not have taken place if this means of communicating information along the line had existed. And yet we are told by the *intelligent** committee of investigation, that nobody was to blame except one of the engineers, who was censurable for carelessness. The poor engineer, we have no doubt, did as well as the miserable arrangements of the rail-road company would admit. They had neglected to provide means of communication along the line, and all the engineers could do was to "go ahead," as directed by the conductors.—The blame lay with the company, and they ought to be severely punished for it.

Lastly, it appears that, on some of the roads, there are no definite and positive regulations regarding the management of trains at "turn-outs." Where there is but one track, the simple regulation of requiring a train to stop at a "turn-out," until the other train arrives and passes, would prevent even the possibil-

* One of them could not write his own name.

ity of a collision. How, then, do collisions happen? By such regulations being entirely disregarded.

The fact is, that all our legislation regarding the management of rail-roads is lamentably defective. Such legislation should extend to the minutest particulars regarding rail-road management. It should positively forbid the running of a single car on a road, that has not all those safe-guards against accidents which we have pointed out above, with the exception of a double track, and even that should be required on certain routes.

The only way to make rail-road directors decently careful of human life, and less penurious, is not to threaten them with indictments for manslaughter, &c., that only creating legal proceedings for the benefit of lawyers—but to enact laws compelling rail-road companies to forfeit the sum of at least \$10,000 for every life lost by any accident whatever of the train—it being proved that the train, at the time of the accident, was in the charge of the agents of the company; and \$5,000 for every passenger wounded not fatally; and that the company's charter be considered as forfeited, and no train be allowed to run, until the above fines for loss of life and for wounded be paid.

Such legislation would bring rail-road companies to their senses. It would teach them that human life was worth something, and that the granting of a rail-road charter was not a license to commit wholesale murder.

The terrible destruction of human life on rail-roads in this country—while in Europe it is a thing almost unknown—is becoming so common, that public indignation is beginning to be aroused. The laws afford no relief. Every verdict of a committee of investigation declares that no one is guilty. The present laws on the subject, such as they are, afford every facility for escaping punishment. If something is not done in the way of legislation, to punish the gross and criminal carelessness of the agents of rail-road companies, the public will take the matter into their own hands, and Lynch law will inflict its awful and summary punishments upon them. We would regret to see things come to this pass; but the public cannot, will not, quietly see men, women and children, made the sport of a few rail-road conductors and engineers, who, through sheer carelessness, and the bad regulation of rail-road companies, so often make wholesale slaughter of passengers entrusted to their charge. Some symptoms of a lynching propensity manifested themselves at the Amboy slaughter; and if legislation does not soon come to the aid of the public, we may expect to hear of the awful and summary chastisements of rail-road agents without the aid of judge or jury.

To show the frightful extent to which rail-road slaughter has prevailed, since the commencement of the present year, we present the following table from the New-York Herald:

Number of Rail-road accidents, with the killed and wounded, during each month of the present year.

Months.	No. of Accidents.	Killed.	Wound ed.
January,	12	25	40
February,	6	6	11
March,	14	24	62
April,	4	25	54
May,	8	54	49
June,	5	6	19
July,	11	8	22
August,	5	29	76
Total to Aug. 12.....	65	177	333

Sixty-five casualties, a hundred and seventy-six deaths, and three hundred and thirty-three persons injured! There is a total which should put our civilization to the blush, and almost make men forswear the progress of the age.

Can it be believed that in a country like this, where we make our civilization a boast, there is no legislation adequate to prevent the monthly commission of human slaughter on our rail-roads? And yet such is the fact.* Who ever heard of rail-road agents or steamboat agents being punished for the destruction of human life, through their gross negligence of duty; or of rail-road or steamboat companies being punished for a laxity of caution and regulation which resulted in the most awful destruction of human life? Murder after murder is committed on our rail-roads, and all that is heard of them afterwards is, that the verdict of a committee of investigation declared that no one was to blame! Will the world believe it? Will they not just as soon believe, that such verdicts are bought with the money of rail-road companies?

In the name of justice, of humanity, and of civilization, we

* Whatever may be thought of the following remarks, which we take from the Charleston Mercury, it must be admitted that there is much foundation for them:

"The character which the north arrogates to itself, of a more refined mixture of humanity and intelligence than is to be found elsewhere, is sadly illustrated by these swiftly recurring scenes of destruction on their great highways—nearly all of them, from the excessive desire for the reputation of quick travelling, and the looking at the end without regard to the means. Those who ought to be the responsible managers of the roads, are involved in many speculations at once, and the care of the interests of the stockholders and the safety of the public are entrusted to subordinates who neither know their responsibility, nor respect the trust committed to them. The spirit of racing, and furious running against time, is fostered by the public and by the press daily, while once a month the same public and press denounce the consequences as murder.

The rail-roads at the north seem almost without law, at least law that is recognised and obeyed. Hardly any of them have a double track, yet there is scarcely one of them where there is a distinct regulation to determine what a train shall do which is out of time. We judge thus, at least, from the character of the collisions. Besides, on the oldest and most frequented roads sharp curves, which might easily be obviated, are allowed to stand in spite of the terrible lessons of experience, like pitfalls in the way of the traveler, the end of which too often is death.

call upon the legislatures of our States to legislate more effectually for the preservation of human life on rail-roads. It needs no lengthened statutes to effect the desired object. To prevent effectually these horrid slaughters, our legislatures have only to enact *that rail-road companies shall pay the sum of \$10,000 for every life lost, and \$5,000 for every passenger wounded, and shall not run their trains until such fines are paid—it being proved that the accidents of the trains were not caused by the passengers.* The regulations of trains should also be fixed by law, and any violation of them, or neglect of them, should be punished by a fine of not less than \$10,000.

If any one should think this not sufficient, we would adopt the suggestion, in all seriousness, that the law should require, *that every train should be provided with a small private car, to be placed immediately behind the locomotive engine, in which, at least, one of the Directors of a company should always be found during the movement of the train—a fine of \$10,000 being forfeited by the company, in case that the car should cease to be occupied for a single moment during a transit.*

The progress of rail-road enterprise in this country is truly astonishing. Road after road follows in rapid succession, and new roads are projected every day. It is difficult for any journal, except one devoted exclusively to rail-roads, to keep pace with them.

ART. XII.—EDITORIAL NOTES.

WE are indebted to D. Appleton and Co., of New-York, for a copy of their new and very handsome edition, entirely revised, of Sir Charles Lyell's *Manual of Elementary Geology*, embracing the ancient changes of the earth and its inhabitants, as illustrated by geological monuments. The volume contains five hundred wood cuts. Sir Charles says in the preface, "This manual is not an epitome of the Principles of Geology, nor intended as an introduction to that work. The Principles contain a view of the *modern* changes of the earth and its inhabitants; whilst the Manual, as above mentioned, refers to the *ancient*."

From the same source we receive the "*Philosophy of Sir William Hamilton, Bart.*," Professor of Logic and Metaphysics in Edinburgh University, arranged and edited by O. W. Wight, translator of Cousin's History of Modern Philosophy. The volume is intended for the use of schools and colleges, and includes nearly all that Sir William Hamilton has written upon metaphysics. The completed supplementary dissertations on Reid, the foot notes to Reid, and the philosophical portions of the discussions, have been used in making up the work. Another volume may follow, embracing a "General Preface to Reid," and a "Sequel to the Dissertations."

The Appletons are also publishers of *The Romance of Abelard and Heloise*, by O. W. Wight, editor of Hamilton's Philosophy. A very delightful book, over

which one may muse and dream. Many of the deeply interesting letters of Abélard and Heloise are introduced.

The same house have issued *Don Quixotte de la Mancha*: a revised translation, based on those of Motteaux, Jarvis, and Smollett, with numerous characteristic, most ludicrous, and yet superb illustrations. The edition is, in every respect, a splendid one, and ought to be found upon every drawing-room table in the land, as an endless source of amusement combined with instruction. Who would be without his memories of the "Knight of the Rueful Countenance," and the redoubtable Sancho?

A. S. Barnes & Co., New-York, send us the "*Teacher and Parent*;" a treatise upon common school education, by Charles Northend, A.M., Superintendent of Public Schools, Danvers, Mass. Third edition. Also, *Youth's Manual of Geography, combined with History and Astronomy*, by James Monteith. Also, *School Architecture*, or Contributions to the Improvement of Schoolhouses in the United States, by Henry Barnard, Commissioner of Public Schools in Rhode Island. Third edition.

Crosby, Nichols & Co., of Boston, have published the *Cloister Life of Charles the Fifth*, by William Sterling, from the second London edition. A portrait of the emperor embellishes the title page. The volume is a learned, and, at the same time, most interesting one, in every respect. *The Eclipse of Faith, or a Visit to a Religious Sceptic*, is another volume from the same house, ascribed to Henry Rogers, author of many able papers in the Edinburgh Review, which have been published in England in two volumes. It has been reviewed in the literary Quarterlies of Great Britain, with elaborations. *The Sickness and Health of the People of Bleaburn*, is a small duodecimo from the same quarter, referring to the experiences of one, "who, throughout all her days, and particularly during her blessed and peculiar visitations in a far distant, obscure, and disease-smitten village, deserved the title of the Good Lady." The *Child's Matins and Vespers* is another little book adapted to the same ends.

A *Memoir of Mary L. Ware*, by Edward B. Hall; Crosby, Nichols & Co., Boston; embracing the life, faith, trials and works of an eminently pious and excellent woman. *The Prophets and Kings of the Old Testament*, a series of sermons, preached in the Chapel of Lincoln's Inn, by Rev. Dennison Maurice, Professor of Divinity in King's College, London; Crosby & Nichols, Boston.

Lamport, Blakeman & Law, furnish us *Historical Memoirs of Louisiana*, from the first settlement of the colony to the departure of Governor O'Reilly, in 1770, with historical and biographical notes, forming the fifth of the series of Historical Collections of Louisiana, by B. F. French, Member of Historical Societies of Louisiana, New-York, New-Jersey, Connecticut, &c. The volume contains a very handsome portrait of M. de Bienville, the founder of New-Orleans, engraved from a portrait in the possession of J. D. B. De Bow, copied from the original in the family of Baron Grant, of Longueuil, Canada. This is believed to be the only portrait of Bienville in existence, and the first engraving that has been made from it, and, on that account, must prove of great interest in Louisiana, and recommend the volume to its citizens.

We copy from the Montreal Herald a notice of this portrait:

M DE BIENVILLE, THE FOUNDER OF NEW-ORLEANS.

Among the family portraits in the gallery of the Baron de Longueuil, of this Province, there is one in heavy mail, of M. de Bienville, a man famous above all others, for half a century, in the early annals of Louisiana, and the founder of the city of New-Orleans.

A copy of this portrait, with the owner's permission, has lately been made by one of our most distinguished artists, for Mr. De Bow, a citizen of Louisiana, and it is believed to be the only copy, as this is the only original picture of that truly great man.

"If you will examine," says M. de Longueuil, in a note we have been permitted to see, "the back of M. de Bienville's portrait, you will find his name, and the date when the likeness was taken, inscribed thereon by the artist. I can, of course, give no personal information on the subject, further than having frequently heard the late Baroness, my grandmother, mention the portrait as that of her relation, M. de Bienville, the founder of New-Orleans. My great-grandmother, who was still living when I was four years old, used to speak of it as such to the older members of my family. You are probably aware that both the above-mentioned ladies attained an extreme old age, and must, of course, have well known the portrait to be authentic. The reminiscences of my great-grandmother now dating more than a century back."

It cannot be other than a source of surprise, that, greatly as New-Orleans is indebted to the memory of de Bienville, no monument, or bust, or other representation of him can be found in any of her public buildings or squares. He was the founder of the city as much as was Peter the Great the founder of the one that bears his own name, and seemed ever to have cherished it as the darling object of his pride in spite of every obstacle, and at times in spite even of the seeming designs of his government.

M. de Bienville belonged to that illustrious brotherhood, the sons of Charles Lemoyne de Bienville, an emigrant to Canada in 1640, who distinguished themselves so much in the early annals of Louisiana. Promoted to the rank of Governor of the Province at the early age of twenty, he continued to occupy, with rare intermissions, that high position through every vicissitude of the colony, as well under the proprietary of the Crown as under the charters of Crozat and that of the Western Company. After forty years of service in the field and in the council, in hostile movements against the Indians, and at times against the Spaniards, he retired at last to Paris, ending his days there on the 7th March, 1767, at the advanced age of over 80 years.

Wild Jack, or the Stolen Child, by Mrs. Hentz. *Poems*, by Thomas Blanchard Read. *Hints on the Daguerreotype*, photographic pictures, &c. *Randolph of Roanoke*, Wirt, &c., by F. H. Thomas. These works are from the house of A. Hart, Philadelphia, through J. B. Steel, of New-Orleans.

A private letter before us says :

I observe that you intend to notice the proceedings of the Memphis Convention. In that notice I hope you will refer to the work before the Committee on Manufactures, whose report should be prepared with *very great* care, and give not only general views, but reliable and practical details. We should, *perhaps*, refer to every important manufacturing position in the cotton planting states, and show their relative advantages when compared with such positions in Europe, and in the Northeastern States. How can we get this information ?

I suppose that there is as much available *water power* on the Tennessee and Chattahoochee Rivers as can be found either in England or New-England. Is it not important to prove the facts, and where shall we get them ? Our topographical works of Tennessee, Georgia, and Alabama, are very meagre.

Suppose you call such attention to the matter as will elicit all the information we need. The Committee on Manufactures appointed by the Convention are, Hamilton Smith, of Cannelton, Indiana ; William Gregg, Esq., South Carolina ; Colonel S. D. Morgan, Tennessee ; Hon. A. Fowler, Arkansas ; C. G. Bayler, District of Columbia.

A gentleman in Tennessee has sent us a plan for a grand circulating library for the South, as a means of distributing information where the population is proportionately sparse. He proposes that central depots be established from which books will be distributed to the county towns of counties in the proportion of their subscription, which books, at the end of twelve months, will be returned, and new ones obtained. Every county subscribing 1,000 dollars would receive, perhaps, 1,000 new books each year, &c. We wish our people were as ready to take up county subscriptions, and as ready to tax themselves for the purchase of books and libraries, as they are for subscribing to rail-roads, &c. Something certainly may be done, but who will take the lead ?

The Census of the United States will be published in the course of a month or two, in one very large quarto volume, 12 or 1,400 pages, neatly printed and bound. The manufacturing and mortuary statistics are not included. Congress did not order them printed. The arrangement of subjects in the volume is as follows :

- I. Population by Counties—Classification of Ages and Color—Aggregate.
- II. Population by Subdivision of Counties.
- III. Nativities of the Population.
- IV. Births, Marriages, Deaths, Dwellings, and Families.
- V. Progress of Population from 1790 to 1850.
- VI. Deaf and Dumb, Blind, Insane, and Idiotic.
- VII. Colleges, Academies, Schools, &c.
- VIII. Attending Schools, during the year, as returned by Families.
- IX. Adults in the State who cannot Read and Write.
- X. Professions, Occupations, and Trades of the Male Population.
- XI. Agriculture, Farms, and Implements, Stock, Products, Home Manufactures, &c.
- XII. Newspapers and Periodicals.
- XIII. Libraries other than Private.
- XIV. Churches, Church Property, &c.